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Abstract

An increasing number of lodging businesses utilize online third-party intermediaries (OTPIs) for distribution services on the internet. The purpose of the study was to investigate the decision-making processes of lodging firms in the adoption of OTPIs. The study developed and tested a conceptual model by strategically combining a technology–organization–environment framework (TOE) and an expectation–confirmation model (ECM). The results showed that, with regard to TOE, technology and organization have significant impacts on confirmation in ECM. Furthermore, the environment aspect of TOE significantly influences satisfaction in ECM, and both confirmation and satisfaction are antecedents of continuance intention. The study contributes to the knowledge body of TOE and ECM, and provides industry practitioners with strategies for the communications and decision-making processes of lodging businesses and OTPIs.

Keywords

E-COMMERCE, EXPECTATION–CONFIRMATION MODEL (ECM), LODGING, ONLINE THIRD-PARTY INTERMEDIARIES (OTPIs), TECHNOLOGY–ORGANIZATION–ENVIRONMENT (TOE) FRAMEWORK

Disciplines

Fashion Design | Fiber, Textile, and Weaving Arts | Graphic Design | Industrial and Product Design

Comments

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RESEARCH NOTE

EXPLORING THE DETERMINANTS OF E-COMMERCE BY INTEGRATING A TECHNOLOGY–ORGANIZATION–ENVIRONMENT FRAMEWORK AND AN EXPECTATION–CONFIRMATION MODEL

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An increasing number of lodging businesses utilize online third-party intermediaries (OTPIs) for distribution services on the internet. The purpose of the study was to investigate the decision-making processes of lodging firms in the adoption of OTPIs. The study developed and tested a conceptual model by strategically combining a technology–organization–environment framework (TOE) and an expectation–confirmation model (ECM). The results showed that, with regard to TOE, technology and organization have significant impacts on confirmation in ECM. Furthermore, the environment aspect of TOE significantly influences satisfaction in ECM, and both confirmation and satisfaction are antecedents of continuance intention. The study contributes to the knowledge body of TOE and ECM, and provides industry practitioners with strategies for the communications and decision-making processes of lodging businesses and OTPIs.

Key words: Online third-party intermediaries (OTPIs); Lodging; E-commerce;
Technology–organization–environment (TOE) framework; Expectation–confirmation model (ECM)

Introduction

Since the emergence of the Internet in the mid-1990s, e-commerce has become essential for successful business operations in the lodging industry (Kale, Singh, & Perlmutter, 2000). Many international and

regional chain lodging businesses not only establish their own company websites for e-booking, but also make efforts toward diversifying their online distribution channels. In contrast, many small and medium enterprises (SMEs) are not capable of providing room-booking services on their websites

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due to the lack of budget, labor, and technology (Croes & Tesone, 2004). Therefore, lodging businesses at almost all levels have shown demand for online third-party intermediaries (OTPIs) (Murphy & Kielgast, 2008). OTPIs such as Expedia, Orbitz, and Priceline gather a number of suppliers to provide consumers with diverse options in flights, hotel rooms, restaurant service, etc. (Gazzoli, Kim, & Palakurthi, 2008).

To understand and predict the adoption of OTPIs as technical innovations in the hospitality industry, the technology–organization–environment (TOE) framework (Tornatzky & Fleischer, 1990) and the expectation–confirmation model (ECM) (Oliver, 1980) were used to elucidate the antecedents of hotel managers' willingness to employ OTPIs. When the perceived performance of OTPI services is higher than preconsumption expectations, lodging firms confirm the usefulness of OTPIs and consequently experience satisfaction, leading to hotels' continuing usage intentions for OTPIs (M. C. Lee, 2010).

Although TOE and ECM have been widely used to explain the antecedents and consequences of technology adoptions, to the knowledge of the present authors the two important theories have not been combined together to depict the “big picture” of innovation acceptance, particularly in the context of OTPIs. This study integrated the two theoretical frameworks of TOE and ECM in order to explore the determinants of adopting e-distribution channels in the lodging industry. The specific objectives of the study were to: 1) assess the impacts of technology, organization, and environment in the TOE framework on confirmation and satisfaction in the ECM; and 2) evaluate the impacts of confirmation and satisfaction on continuance intention.

Literature Review

Technology–Organization–Environment (TOE) Framework

The TOE framework proposed by Tornatzky and Fleischer (1990) is an important theory of product technology in the field of organizational psychology (see Baker, 2011). The goal of the TOE framework is to explain and predict an organization's willingness to adopt new technologies, technical innovations, and diffusion.

The three perspectives of the TOE model include technology, organization, and environment. From the technology perspective, OTPIs provide diverse distribution channels on a global basis and provide many merits that traditional marketing techniques do not offer, such as easy access to consumers and extensive exposure to brand information (Standing, Tang-Taye, & Boyer, 2014). From the organization perspective, Wang and Qualls (2007) suggested that innovations could improve management practices from the perspectives of leadership, strategies, and resource allocations. Espino-Rodríguez and Gil-Padilla (2007) suggested that with the assistance of OTPIs, lodging businesses can obtain organizational competencies with limited capacities and effort. Environment factors include the industry, consumers, competitors, access to resources supplied by others, compliance with governmental regulations, and many others (Tornatzky & Fleischer, 1990).

Expectation–Confirmation Model (ECM)

The ECM proposed by Bhattacharjee (2001) explains the congruence between expectation and performance and its effect on information systems (IS) users' continuance intentions. ECM replaced the construct of expectation in expectation–confirmation theory (ECT) proposed by Oliver (1980) with postusage perceived usefulness and removed the performance construct of ECT because ECM assumes that the influence of perceived performance is already explained by confirmation. In addition, ECM renamed “repurchase intention” as “continuance usage intention.” Y. Lee and Kwon (2011) indicated that confirmation and user satisfaction positively impact continuance intention to use social networking services.

In the ECM, confirmation is the congruence between expectation and actual performance in ECM (Bhattacharjee, 2001). Satisfaction, as initially defined by Locke (1976), was used to describe job performance as “positive emotional state resulting from the appraisal of one's job” (p. 1300). Satisfaction is a key psychological state that assists consumers in moving from cognitive to affective judgment (Crosby, Evans, & Cowles, 1990). Continuance intention is defined as the continued usage of IS in which a continuance decision follows an initial acceptance decision (Bhattacharjee, 2001; Limayem & Cheung, 2008).

Linking TOE and ECM

Previous studies have attempted to integrate the ECM with other theories to explain users' continuance intentions (e.g., Liao, Chen, & Yen, 2007; Limayem & Cheung, 2008). Among them, Y. Lee and Kwon (2011) suggested that confirmation and satisfaction in the ECM describe cognitive and affective components, respectively. Based on the discussions of the TOE framework, technology and organization explain the cognitive context, while environment illustrates the affective context (e.g., Doong & Lai, 2008; Premkumar & Bhattacharjee, 2008). In summary, the two frameworks that innovatively synthesize TOE and ECM are connected. Specifically, the technology and organization contexts influence confirmation, and the environment context influences satisfaction.

Methodology

Survey Design

The questionnaire employed in this study is composed of three sections. The first section asked respondents about primary characteristics of the hotels at which they were employed. The second section investigated the TOE and the ECM. The measurement items for TOE constructs were adapted from Zou and Cavusgil (2002), Grandon and Pearson (2004), and Andaleeb (1996). The items for ECM were adopted from Cavusgil and Zou (1994), Crosby et al. (1990), and Bhattacharjee (2001). Measurement of all of the items in the second section used a 7-point scale. Section three collected a variety of demographic and socioeconomic information about the respondents.

Data Collection

We identified 215 hotels (115 from Santorini and 100 from Mykonos) in the Greek Islands from the *Greek Travel Pages*, a monthly travel guidebook issued by a tourism organization in Greece. An online survey was distributed to the general managers or owners of the 215 hotels. Of the 49 returned responses, 12 were excluded after the data screening procedure. A total of 37 responses were retained for further data analysis.

Data Analysis

The structural equation model (SEM) of partial least squares (PLS) with bootstrapping was used for data analysis. PLS-SEM is suitable for small samples and for data that do not necessarily exhibit the multivariate normal distributions required by covariance-based SEM (Hair, Hult, Ringle, & Sarstedt, 2014). Given that this study had relatively small data, PLS-SEM was deemed an appropriate statistical technique for the study.

Results

Respondent Profile

Of the 37 hotels, the majority (35.5%) were rated as four star, followed by five star (25.8%), three star (22.6%), and one star (13.0%). The hotels were classified into independent (86.6%) and chains (13.3%). The largest groups categorized by employee type were general managers (45.7%) and sales managers/reservation managers (34.3%), followed by owners (17.1%).

Measurement Model Evaluation

The estimates of the PLS-SEM model's parameters and diagnostics offered strong evidence for the reliability and validity of all of the constructs in the study and are shown in Table 1. The outer loadings of all of the items on their constructs were significant ($p < 0.01$) and ranged from 0.57 to 0.95. Two items (F_1 and S_5) fell below the threshold value of 0.70 (Bagozzi & Yi, 1988) but were retained due to their significance. Lower thresholds are sometimes acceptable in the literature, because the magnitude of the coefficients relies on the number of factors of which the construct consists (Tang, Jang, & Morrison, 2012). The CR, as a criterion to establish internal consistency reliability, of the six constructs ranged from 0.89 to 0.95, above the recommended threshold of 0.70 (Hair et al., 2014). With regard to convergent validity, the AVEs of the six constructs ranged from 0.56 to 0.86, indicating above the minimum threshold of 0.50 and signifying satisfactory convergent validity (Bagozzi & Yi, 1988). Discriminant validity was confirmed as all of the variances compared were greater than the square

Table 1
Descriptive Statistics ($n = 37$)

Variables ^a	Mean	SD	Outer Loading
Technology ($\alpha = 0.86$; CR = 0.90; AVE = 0.56)			
F ₁ : Using OTPI increases the sales.	5.97	1.09	0.57
F ₂ : Using OTPI reduces costs of operation.	4.69	1.77	0.70
F ₃ : Using OTPI converts fixed costs to variable costs.	4.82	1.36	0.86
S ₄ : Using OTPI helps our hotel become stronger in strategic position.	5.32	1.41	0.82
S ₅ : Using OTPI helps our hotel become competitive in the global markets.	5.62	1.19	0.64
S ₆ : Using OTPI increases our company's market share.	5.58	1.05	0.88
S ₇ : Using OTPI makes up the shortage of resources or technology.	5.06	1.37	0.71
Organization ($\alpha = 0.81$; CR = 0.89; AVE = 0.73)			
NC ₈ : Constraints of IS capabilities encourages the use of OTPIs.	4.47	1.02	0.88
NC ₉ : Shortage of IS expertise encourages the use of OTPIs.	4.67	0.99	0.88
NC ₁₀ : Top management encourages the use of OTPIs.	5.22	1.49	0.81
Environment ($\alpha = 0.92$; CR = 0.95; AVE = 0.86)			
CP ₁₁ : Competitive pressure from other hotels within my industry encourage the use of OTPIs.	5.49	1.52	0.92
CP ₁₂ : Social factors (i.e., image, etc.) are important in our decision to use OTPIs.	5.11	1.52	0.92
CP ₁₃ : Customers' preference and behaviors are important considerations to adopt OTPIs.	5.32	1.53	0.94
Confirmation ($\alpha = 0.95$; CR = 0.95; AVE = 0.70)			
C ₁₄ : Gain foothold in the online environment.	4.85	1.26	0.73
C ₁₅ : Improve the distribution system of my hotel.	5.37	0.92	0.85
C ₁₆ : Increase the awareness of my hotel from customers.	5.63	0.89	0.87
C ₁₇ : Improve our hotel firm's image.	5.27	1.11	0.78
C ₁₈ : Respond to competitive pressure.	5.53	0.86	0.81
C ₁₉ : Expand strategically into new market segments.	5.72	1.03	0.83
C ₂₀ : Help to address current market segments.	5.79	0.92	0.87
C ₂₁ : Generate sales or profits.	5.63	1.01	0.84
C ₂₂ : Contribute to company performance.	5.60	0.89	0.92
Satisfaction ($\alpha = 0.80$; CR = 0.91; AVE = 0.83)			
RS ₂₃ : The relationship between the two companies is very positive.	5.64	1.03	0.91
RS ₂₄ : Our hotel firm should be satisfied with XYZ.	5.14	1.41	0.91
Continuance Intention ($\alpha = 0.85$; CR = 0.91; AVE = 0.77)			
CI ₂₅ : I intend to continue using XYZ rather than discontinue its use.	5.50	1.17	0.86
CI ₂₆ : My intentions are to continue using the OTPI(s) than to use any alternative means.	5.03	1.50	0.81
CI ₂₇ : If I could, I would like to continue using the OTPI(s) as long as possible.	5.55	1.21	0.95

All items measured on a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*. α , Cronbach' alpha; AVE, average variance extracted; CR, composite reliability; F, financial advantage; S, strategic advantage; TC, need of competences; CP, competitive pressure; C, confirmation; RS, relation satisfaction; CI, continuance intention.

of the correlation coefficients (Fornell & Larcker, 1981) (Table 2).

Structural Model and Hypothesis Testing

The first essential criteria for assessing PLS-SEM is the coefficient of determination (R^2) for each endogenous latent variable. A R^2 value of 0.33 or greater for an exogenous construct is moderately substantial or acceptable (Fornell & Cha, 1994). Stone-Geisser's Q^2 Test (Geisser, 1974) was used to assess the predictive validity of the exogenous latent variables. All of the Q^2 values

in the model were significantly above zero, which demonstrated high predictive power of the exogenous constructs (Table 3). The structural model is illustrated in Figure 1. The results indicated that H1–H5 were supported.

Discussions and Implication

This study provides several key insights for hotel managers in understanding the factors that influence the adoption of OTPIs. Within the technology context, hotels adopt innovative technology if they have needs to overcome performance weaknesses

Table 2
Correlations for Constructs and AVE

Construct	Technology	Organization	Environment	Confirmation	Satisfaction	Continuance Intention
Technology	(0.561)					
Organization	0.455	(0.728)				
Environment	0.259	0.720	(0.856)			
Confirmation	0.649	0.443	0.306	(0.700)		
Satisfaction	0.355	0.544	0.562	0.574	(0.829)	
Continuance intention	0.557	0.455	0.334	0.683	0.741	(0.765)

Note: The number in parameter in parentheses is the average variance extracted (AVE).

Table 3
Explained Variance (R^2) and the Prediction Relevance (Q^2) Test

Exogenous Construct	Explained Variance (R^2)	Prediction Relevance (Q^2)
Confirmation	0.45	0.09
Satisfaction	0.50	0.30
Continuance intention	0.65	0.29

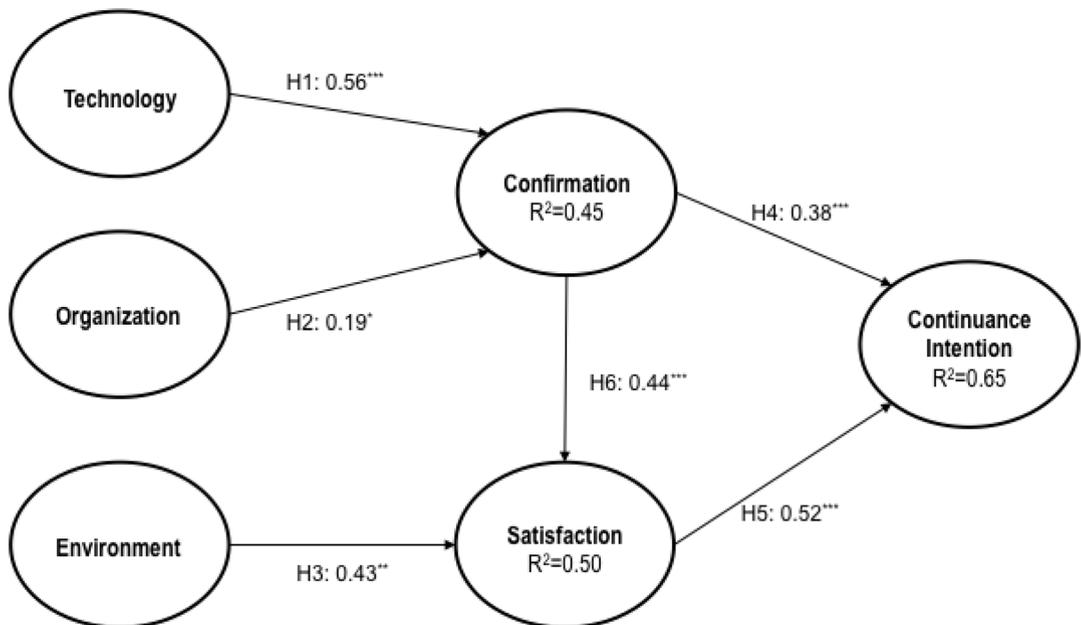


Figure 1. PLS results of the structural model. *Significant at $p < 0.10$; **significant at $p < 0.05$, ***significant at $p < 0.01$.

or exploit new business opportunities. The new technology is expected to improve work efficiency and productivity (Chwelos, Benbasat, & Dexter, 2001). The financial investment required is another consideration for hotels in using OTPIs. Thus, OTPIs should provide evidence to persuade hotel clients about the financial benefits that OTPIs can bring over both the short and long term. Third, in communications between OTPIs and their hotel clients, OTPIs should stress that they can assist hotels in becoming stronger in terms of strategic position and competitiveness in global markets. The effectiveness and efficiency of OTPIs should be periodically evaluated in order to monitor the dynamic characteristics of hotels and their shares within the global market. Hotels can adjust managerial strategies accordingly to increase sales and strengthen cooperation with OTPIs. As a result, lodging businesses can be expected to gain growing market opportunities and reduce operation costs due to the financial and strategic advantages of OTPIs.

Within the organizational context, lack of competence and deficits of skilled employees may cause uncertainty regarding the value of OTPIs and can be regarded as a barrier to IS adoption (Buhalis & Kaldis, 2008). These difficulties affect readiness to use IT for distribution and the internet as a business tool, especially true for SMEs. Therefore, OTPIs should strive to make clients realize that OTPIs can be potential sources of external IT knowledge and skills for lodging businesses. Moreover, top management support is a crucial factor in OTPIs' adoption. Thus, OTPIs should identify the concerns of top management personnel of lodging businesses at the macro or corporate level and provide personalized packages to help them perceive that the benefits of OTPI adoption outweigh the risks.

In the environmental context, many lodging businesses are under marketing pressure to be aware of OTPIs because they do not want to be perceived as outdated, which could negatively affect their sales. Specifically, the results of the study suggested that hotel managers perceived that social factors (e.g., image) and consumers' preferences are an important consideration in their decisions whether or not to use OTPIs. As market competition becomes increasingly fierce, lodging businesses require increasing online visibility to support their competitive positions. Moreover, consumers are more demanding now than

ever and sophisticated consumers request tailored offers. OTPIs can provide useful product information and customize promotion packages to make it easy for partner hotels to communicate with consumers. Thus, the emergence of competitive pressure as a key variable emphasizes the need to adopt OTPIs as a means of achieving strategic advantage.

The study also provides suggestions for OTPIs to maintain long-term cooperation with lodging businesses. If lodging businesses perceive performance that exceeds their expectations, their satisfaction and intentions for continued use of OTPIs will increase. Notably, satisfaction in the affective path is apparently stronger than confirmation, the cognitive path for influencing continuance intention. The result is consistent with previous studies exploring the ECM, which indicate that affection (satisfaction) overrides cognition (confirmation) in long-term relationships (e.g., Bhattacharjee, 2001; Bhattacharjee, Perols, & Sanford, 2008). Furthermore, the relationship also can be explained using the elaboration likelihood model (ELM) of persuasion (Petty & Cacioppo, 1986). Cognitive confirmation is generated in the central route of information processing, whereas satisfaction as affection is created in the peripheral route of information processing. Confirmation in the central route requires hotel managers to engage in elaborations of technology and organizational advantages. However, most lodging businesses, particularly SMEs, are not knowledgeable or capable of such assessment. In contrast, environmental context as an affective factor is easily evaluated. Hotel managers rely more upon a peripheral route to assess the value of OTPIs than on cognitive efforts. Therefore, we recommend that OTPIs provide personalized service packages and pay close attention to details to increase hotel clients' affective happiness. Consequently, when hotel managers confirm that their expectations are satisfied from OTPI services, the cooperation between OTPIs and lodging businesses becomes enduring.

Limitations and Future Research

Despite its valuable theoretical and managerial implications, the study has several limitations that require further examination and additional research. First, although SEM-PLS is capable of analyzing a

small-sized sample, the problem of overestimated or underestimated standard errors due to the small sample size can't be ignored. Therefore, larger samples are recommended to repeat the analysis in the study. Second, the study only investigated small- and moderate-sized lodging properties in Greece. The results may be biased due to the restricted geographic location. Future studies are advised to examine the study sample in other countries. Third, the study tested the continuance intention as the consequential construct. Scholars could test follow-up behavior rather than intention in future.

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