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11 Complexity in the tourism and hospitality online purchasing process

Nikolaos Pappas and Andreas Papatheodorou

Abstract

This chapter examines the complexity of attributes affecting the online purchasing process in tourism and hospitality. Eight elements (i.e. marketing activities, perceived benefits, perceived risks, over-choice confusion, price issues, quality issues, consumer trust and intention to purchase) are identified as of principal importance. Based on a sample of 735 holidaymakers, the empirical findings stress the role of perceived benefits in e-marketing activities; the significance of perceived risks for price and quality issues; and the importance of over-choice confusion to e-shopping. The research employs Qualitative Comparative Analysis (QCA), an innovative technique in tourism. QCA results are compared to regression highlighting the possible superiority of this non-linear mixed method against correlational analysis. The chapter progresses from fit to predictive validity, something that only a handful of studies have employed in tourism and hospitality, and generally in the service sector. It also discusses several theoretical, methodological and managerial implications, whilst it contributes in both, theoretical and methodological domains.

Keywords:

Online tourism shopping; chaos and complexity; benefits and risks; over-choice confusion; price and quality; e-consumer trust

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Introduction

Information Technology has heavily impacted tourism and hospitality and the way travellers acquire and use relevant information (Xiang et al., 2015). Over 10% of Internet searches are related to travel (Jansen et al., 2008; Pappas, 2017), while 60% of people 15 years old or older tend to use the Web to search tourism and hospitality information and purchase relevant products (No & Kim, 2015). Not surprisingly, therefore, tourism and hospitality oriented web-vendors have become very active, significantly influencing the access of travellers to tourism and hospitality products and services (Xiang et al., 2008).

Hyun (2006) classifies tourist and hospitality information websites into portals, travel agencies, public institutions, online communities, and others. Based on the provision of information, Pan and Fesenmaier (2000) have divided tourism and hospitality related e-vendors into travel and tourism websites. From a consumer's point of view, the beneficial impact of Internet shopping predominantly relates to time and place convenience; value enhancement thanks to effective price comparison; and hedonic consumption arising from the very purchasing experience (Sigala, 2004). On the other hand, a number of Internet use caveats have been identified such as privacy and security concerns (Evans & Mathur, 2005); online versus offline risks (Hong & Yi, 2012); price and quality issues (Pappas, 2017); and over-choice confusion (Bjork & Kauppinen-Raisanen, 2012). Still, research on the complexity of online tourism and hospitality purchasing decisions and behaviour is rather limited. This is surprising given the role of technology in shaping consumer behaviour in advanced modern societies (Chai, 2012).

From a methodological point of view, most business-oriented and almost all tourism and hospitality studies evaluate statistical relationships based on symmetric analysis as encapsulated by structural equation modelling (SEM) and regression. These linear methods adopt a net effect estimation approach but ignore the complexities that exist in reality and are apparent in academic datasets (Woodside, 2014). This is because when multicollinearity is high, estimates may prove statistically insignificant; alternatively, estimates can prove inconsistent with the set hypotheses since the estimated regression function is of poor predictive power (Van der Meer et al., 2005). Conversely, in cases of low multi-collinearity the

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marginal contribution of one explanatory variable may end up depending on the other explanatory variables included in the estimated function albeit in a non-linear manner (Woodside, 2013). In fact, the standard assumption in regression analysis is that the addition of new variables increases (at least the adjusted) goodness-to-fit (Armstrong, 2012); nonetheless, the usual co-variance predictors in non-experimental studies do not provide any related supportive evidence (Skarmeas et al., 2014).

This chapter focuses on website vendors in tourism and hospitality, whilst its full linear analysis is presented in Pappas (2017). It synthesises previous research (i.e. what we know) on the main elements (variables) affecting tourism online purchasing intentions in terms of marketing activities (Chikweche & Fletcher, 2010); perceived benefits (Kim et al., 2008); risks (Hong & Yi, 2012) and confusion by over-choice (Tarnanidis et al., Omar, 2015); price (Tarnanidis et al., 2015) and quality issues (Ahn, Ryu, and Han, 2004); consumer trust (Gefen et al., 2003); and intention to purchase (Kim et al., 2008). Most importantly, however, it progresses from the parametric analysis illustrated in Pappas (2017) to a non-linear evaluation of the examined aspects, as it steps beyond a simple synthesis to discuss what we do not know very well, i.e. how complexity affects the attributes of tourism and hospitality online purchasing intentions. Given the sheer scale of online bookings and the inherent risks associated with Internet use, understanding and evaluating consumer behaviour through the theoretical lens of complexity is a relatively uncharted territory worth exploring further. To do so, the paper implements Qualitative Comparative Analysis (QCA), which is relatively new in tourism and hospitality research, while only a few studies have generally employed it in the service sector (Papatheodorou & Pappas, 2017). On these grounds, the contribution of the study is both theoretical and methodological. Concerning literature, it provides a better understanding and possible explanation of online tourism and hospitality decisions based on complexity theory. Further to the study of Pappas (2017), it suggests multiple pathways leading to the same outcome, instead of solely based on only one. As a result, it also provides a series of managerial implications addressing the complexity of online tourism behaviour. In terms of methodology, it applies an innovative asymmetric analysis technique whose possible superiority and suitability for tourism research is assessed by directly comparing its results with dominant linear (i.e.

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Structural Equation Modelling) regression analysis using Pappas (2017) and its associated dataset as a benchmark. The paper also steps forward from fit to predictive validity for the proposed models.

Chaos and complexity

Chaos theory suggests that even small changes can produce substantial diverging outcomes to dynamic systems making it impossible to predict behavioural patterns in the longer term (Kellert, 1993). Complexity theory emerged from chaos theory and focuses on systems with complex characteristics, i.e. it "*…deals with systems that have many interacting agents and although hard to predict, these systems have structure and permit improvement*" (Zahra & Ryan, 2007: 855). Both theories work with nonlinear systems and are sensitive to initial conditions; nonetheless, chaos theory leaves no room for forecasting, while in complexity theory unpredictable behaviour is set and analysed within a quasi-stable context (Olmedo & Mateos, 2015).

More specifically, in the theory of chaos simple systems generate complicated non-predictable behavioural patterns, while the theory of complexity focuses on the way multi-elemental systems lead to relative behavioural predictability (Baggio, 2008). Even if the complexity of chaordic outcomes may result in dramatic and unpredictable situations the emerging dynamic systems are not totally uncontrolled, as some kind of order still exists (Nilson, 1995; Zahra & Ryan, 2007). Thus, in social sciences, complexity theory and Qualitative Comparative Analysis (to be discussed later) may be used to explain consumer evaluations, attributes, and the process of decision-making by implementing alternative asymmetric (nonlinear) combinations of various indicators (Wu et al., 2014).

The tourism and hospitality perspective

Tourism and hospitality research has not adequately focused on complexity so far, as reductionist approaches still prevail (McDonald, 2009). In reality, however, the behavioural patterns of travellers depend on numerous factors and produce complex relationships with inherent nonlinearity, which prevents the emergence of direct causal links (Olmedo & Mateos, 2015). In fact, tourist behaviour is likely to be affected by both endogenous and exogenous systemic factors (Boukas & Ziakas, 2014;

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Dylan, 2017); even so, all tourism and hospitality related factors have emerging stable features as some order seems to exist in their configuration (Olmedo & Mateos, 2015). This is the reason why almost two decades ago, chaos and complexity theories were proposed by Faulkner and Russell (1997) as alternative frameworks to examine tourism attributes and better understand dynamic systems whose comprehension until then was poor, due to the assumption that all underlying relationships are stable and static. In other words, the extent of behavioural complexity makes the Newtonian (linear) thinking inadequate and indicates a need for asymmetric (nonlinear) analysis (Laws & Prideaux, 2005). In tourism and hospitality, the application of complexity theory can provide substantial information concerning the formulation and expression of behavioural patterns (Russell & Faulkner, 2004), helping to better comprehend the changing dynamics of the tourist system (Faulkner & Russell, 2000).

Background of the study

The importance of Internet as a distribution channel in tourism and hospitality is continuously growing, and its revenue generation worldwide is expected to reach 523 billion US dollars in 2016 (Statista, 2016). In fact, e-commerce has rapidly grown mainly due to the convenience and the value for money it offers to customers and the ability for them to learn about firms, products and services (Marom & Seidmann, 2011). On the other hand, perceived risk is included in all shopping decisions, predominantly when the outcome is uncertain (Dholakia, 2001). Hence, e-commerce has created concerns especially with respect to privacy (Pantano et al., 2013), security (Taylor & Strutton 2010), time consumed searching for information; uncertainty dealing with after sales service warranty when compared with traditional ways of shopping (Hong & Yi, 2012) and general distrust in product quality and delivery (Hong & Cha, 2013). Nonetheless, tourism and hospitality research related to retail online shopping behaviour is somewhat limited (Law et al., 2009; Amaro & Durate, 2015).

Marketing activities refer to the development, distribution, pricing and promotion of products and services (Dibb & Simkin, 2013; Pappas, 2015). Marketing can substantially influence the beliefs and perspectives of consumers about the performance of products and services (Nerkar & Roberts 2004) and ultimately determine their likelihood to purchase

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(Leenders & Wierenga, 2008). Online marketing and eWOM is an essential tool for the minimisation of perceived risks introduced by frequent technological advances; the rapid technological evolution and development amongst consumers and competitors; and the reduction of overchoice confusion due to the increasing volume of product and service alternatives available to customers (Bore et al. 2017; Pantano et al., 2013). On the other hand, the benefits and risks of online shopping and the trust of consumers in products affect the e-marketing process (Pescher et al., 2014), since this needs to consider the characteristics of consumers (purposive and entertainment values); the provision and quantity of alternative products; and the formulation process of perceived benefits and risks (Okazaki, 2008).

In particular, the perceived e-commerce risks negatively affect consumers (Kim, 2007) irrespectively of how experienced shoppers they are (Liang & Jin-Shiang, 1998). This negative relationship increases when the risks are associated with monetary losses (Keating et al., 2009). These may prove relatively substantial, e.g. in the case of a family holiday package. In addition, tourists may be overloaded by the massive amounts of information provided by tourism and hospitality oriented web-vendors, as this may then negatively affect the image of tourist products, services, and destinations (Bjork & Kauppinen-Raisanen, 2012). Moreover, the high extent of specialisation and/or similarities of the provided products and services in tourism and hospitality increases the customers' confusion and renders purchasing decisions even more difficult (Yang and Lai, 2006).

Price and quality also affect online shopping. E-vendors provide price comparisons, giving the ability to consumers to find the lowest price for each product and service they are interested in buying (Bruce et al., 2004). The ease of comparing prices and finding product level information through online shopping is unprecedented, and creates new challenges for effective price discrimination (Garbarino & Maxwell, 2010). Furthermore, the importance of web-vendor quality leads companies to improve their websites' design, and enhance the interaction experience of their customers (Kholoud Al-Qeisi et al., 2014). The quality of vendors is a fundamental criterion for the formulation of purchasing and repurchasing intentions over an online channel (Bhatnagar et al., 2003). Thus, when an online channel is characterised by high quality, the consumers tend to

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trust it, hence it increases the possibility to be used by potential clients (Montoya-Weiss et al. 2003). Moreover, the information level (quality, accuracy etc.) provided by the web-vendor, and the consumers' perceptions in terms of product quality this vendor offers, also influence the relationship between price and quality (Ahn et al., 2004).

Having the above in mind, it is now widely accepted that Information Technology has changed the way consumers make their purchasing decisions (Moran & Muzellec, 2017). E-retailers substantially emphasise consumer trust, since e-shoppers are more reluctant to purchase the products in which they are interested online (Park et al., 2012). This is due to the inability of consumers to visit a store with physical presence and examine in person the product they intend to buy (Hong & Cho, 2011). Cognitive trust, which focuses on the beliefs of consumers stemming from logical expectations about the attributes of online retailers, impacts on emotional trust, which concerns the attitudes of consumers and their emotions, and this further impacts upon the intention to purchase (Komiak & Bembasat, 2006). In addition, the level of trust in e-shoppers exposed to inconsistent information and revisions in terms of products and services considerably influences their purchasing intentions (Zhang et al., 2014). This is the reason why e-retailers should try to convince consumers to buy their products (purchase decision and money transfer), by exceeding the trustworthiness behaviour threshold (Bente et al., 2012).

Methods

Participants

The empirical research undertaken in this paper focuses on holidaymakers returning to Manchester International Airport (IATA code: MAN) who had used the Internet to book a part (travel, accommodation, destination activities) or the whole range of their holiday activities. This study used structured personal interviews with structured questionnaires as the most appropriate method to obtain the primary data. Personal interviews were the best method of achieving the study's objectives since they are the most versatile and productive method of communication (Pappas, 2014). They facilitate spontaneity and also provide opportunities to guide the discussion back to the outlined topic when discussions prove unfruitful (Sekaran & Bougie 2009). The participants' selection was based on an

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exclusion question at the beginning of the interview which asked whether the potential participants had purchased online services related to their current vacations. More specifically, a stratified sample was selected by interviewing travellers at the airport's train station; bus station; and parking facilities. Following Sekaran and Bougie's (2009) suggestions for bias minimisation, one out of three travellers approaching the targeted areas was asked to participate in the research. Potential respondents were briefed on the study purpose; informed about the voluntary character of their participation; and assured of full confidentiality and anonymity of responses. Although the level of missing data vis-à-vis the entire sample was very small (i.e. only eight respondents declined to complete the interview), list-wise deletion was used (leading to the exclusion of the specific interview from the analysis) since this is considered as the least problematic method of handling missing data (Allison, 2001).

Sample determination and collection

Representativeness is a fundamental requirement when determining the sample size. According to Sevgin et al. (1996), when there are unknown population proportions, the researcher should choose a conservative response format of 50/50, based on the assumption that 50% of the respondents have negative perceptions, and 50% have not, to determine the sample size. A confidence level of at least 95% and a 5% sampling error were selected. Based on the above, the sample size was:

$$N = \frac{(t - table)^2 (hypothesis)}{S^2} \Rightarrow N = \frac{(1.96)^2 (0.5)(0.5)}{(0.5)^2} \Rightarrow N = 384.16 \ \textit{[Rounded to 400]}$$

The calculation of the sampling size is independent of the total population size, hence the sampling size determines the error (Aaker & Day 1990). Participants were approached in MAN's train station (400 people), bus station (400 people), and car parking facilities (400 people). Of the 1,200 holidaymakers approached, 735 completed the questionnaire (response rate: 61.25%). The overall statistical error of the sample population was 3.6%.

Measures

The questionnaire was based on prior research (Pappas, 2017) and consisted of 39 statements (Table 11.1) rated using a Likert Scale (1 strongly agree/7 strongly disagree), plus one exclusion question concerning online purchasing of tourist/hospitality products.

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Table 11.1: Descriptive statistics. Source: adapted from Pappas (2017)

Marketing Activities		Mean	St. Dev
MA1	Direct marketing activities (i.e. direct mails and e-mails) influence my purchasing online decisions	2.29	0.56
MA2	The "above the line" promotional activities (i.e. TV and radio advertisements) influence my purchasing online decisions	3.02	0.57
MA3	Corporate branding strategy influences my purchasing online decisions	2.78	0.47
MA4	The performance of the product I intend to buy influences my purchasing online decisions	1.75	0.26
Perceived Benefits		Mean	St. Dev
PB1	I believe that online shopping is convenient	2.16	0.60
PB2	I can save money by shopping online	1.87	0.74
PB3	I can save time by shopping online	1.55	0.57
PB4	Purchasing online enables me to accomplish a shopping task more efficiently than using high street stores	2.47	0.37
PB5	Purchasing online increases my shopping productivity	2.83	0.49
Perceived Risks		Mean	St. Dev
PR1	Purchasing online involves greater risk of credit loss compared with traditional shopping	2.55	0.78
PR2	Purchasing online involves a more complicated payment procedure compared with traditional shopping	2.21	0.36
PR3	Purchasing online involves more time spent searching for information compared with traditional shopping	5.28	0.45
PR4	Purchasing online involves greater risk of private information loss compared with traditional shopping	4.06	0.70
PR5	Purchasing online involves greater risk of after-sales service warranty complications compared with traditional shopping	3.87	0.44
PR6	Providing credit card information online is riskier compared to doing so over the phone to an offline vendor	4.85	0.48
PR7	Purchasing online involves a risk of fraudulent website practices	1.88	0.71
Over-Choice Confusion		Mean	St. Dev
CO1	There are so many tourism products to choose from that often I feel confused	2.19	0.48
CO2	Sometimes it is hard to choose from where to shop	3.45	0.47
CO3	The more I learn about tourism products, the harder it seems to choose the best	4.20	0.37
CO4	All the information I get on different tourism products confuses me	2.74	0.55
Price Issues		Mean	St. Dev
PI1	The higher the price of a product, the better its quality	3.01	0.45
PI2	I prefer to buy the best-selling brands	2.82	0.65
PI3	I buy as many of my tourist products as possible at discounted prices	3.68	0.88
PI4	I usually choose lower priced tourist products	1.42	0.72
PI5	I look carefully to find the best value-for-money	1.78	0.53
Quality Issues		Mean	St. Dev
QI1	It is important that the e-vendor provides detailed information on featured products	1.82	0.54
QI2	It is important that the e-vendor provides accurate information on featured products	1.97	0.60
QI3	It is important that the e-vendor can be trusted to provide whatever is promised	1.70	0.85
QI4	It is important that the e-vendor instils confidence in customers by reducing uncertainty (e.g. joint problem-solving)	1.52	0.74
QI5	It is important that the e-vendor understands and adapts to the customer's specific needs	1.69	0.62
QI6	It is important that the e-vendor sells tourism products of high quality	2.46	0.41
QI7	It is important that the e-vendor offers a wide variety of tourism products	2.88	0.46
Consumer Trust		Mean	St. Dev
CT1	Shopping online is trustworthy	2.95	0.69
CT2	The e-vendor I use gives me the impression of being honest	2.87	0.55
CT3	The e-vendor I use gives me the impression that cares for their customers	2.41	0.49
CT4	The e-vendor I use gives me the impression that they have the ability to fulfil my needs	2.56	0.78
Intention to Purchase		Mean	St. Dev
IP1	I am likely to purchase tourism products online	2.24	0.51
IP2	I am likely to recommend online shopping to my friends	1.90	0.59
IP3	I am likely to make another online purchase if I need a tourism product	2.07	0.47

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The reliability and validity of this selection rationale is supported by studies such as Kyle et al. (2003) and Gross and Brown (2008). Eight statements were selected from six different studies, i.e. Chikweche and Fletcher (2010) with respect to marketing activities (MA – four statements); Kim et al. (2008) to evaluate the perceived benefits (PB – five statements) and the intention to purchase (IP – three statements); Hong and Yi (2012) to examine the perceived risks (PR – seven statements); Tarnanidis et al. (2015) regarding over-choice confusion (CO – four statements) and price issues (PI – five statements); Ahn et al. (2004) to address quality issues (QI – seven statements); and Gefen et al. (2003) with respect to consumer trust (CT – four statements).

fsQCA

The study analyses the participants' responses to the questionnaire using fuzzy-set Qualitative Comparative Analysis (fsQCA). This is a theoretical method to examine relationships believed to have a bearing upon the outcome of interest and to identify any potential binary set of combinations generated from related predictors (Longest & Vaisey, 2008). QCA is a mixed-method technique, since it combines quantitative empirical testing (Longest & Vaisey, 2008) and qualitative inductive reasoning through case analysis (Ragin, 2000). QCA handles logical complexity by allowing for the fact that different combinations of characteristics may produce different results when jointly considered with other events or conditions (Kent & Argouslidis, 2005). The study also estimates negated sets, i.e. presence or absence of a given condition (Woodside & Zhang, 2013), where membership is calculated by taking one minus the score of membership of the examined case in the original fuzzy set (Skarmeas et al., 2014).

According to Ordanini et al. (2014), in set theory a sub relation with fuzzy measures is consistent when the membership scores of a given attributional causal set are equal or consistently less than the membership scores in the outcome set. Thus, consistency should be calculated as follows:

$$\textit{Consistency}\ (X_i \leq Y_i) = \sum_i [\min(X_i; Y_i] \,/\, \sum_i (X_i)$$

where, for holidaymaker i, X_i is the membership score in each considered attribute (i.e. configuration) and Y_i is the membership score in the outcome condition. Accordingly, coverage includes the assessment

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of sufficient configurations' empirical importance (Ordanini et al., 2014) and is calculated as follows:

$$Coverage\ (X_i \leq Y_i) = \sum_i [\min(X_i; Y_i] \,/\, \sum_i (Y_i)$$

As presented in the correlation matrix (Table 11.2) the absolute values of all correlation coefficients are below 0.60.

Table 11.2: Correlation matrix

Measures		1	2	3	4	5	6	7	8
1	Marketing Activities	1.00							
2	Perceived Benefits	.31	1.00						
3	Perceived Risks	-.26	-.06	1.00					
4	Over-choice Confusion	-.28	.03	.17	1.00				
5	Price Issues	-.17	-.04	.25	.27	1.00			
6	Quality Issues	.08	.03	-.13	-.18	.12	1.00		
7	Consumer Trust	.09	.01	-.08	-.32	.07	.25	1.00	
8	Intention to Purchase	.22	.12	-.04	-.11	.02	.31	.12	1.00
	Cronbach α	.831	.828	.837	.809	.846	.848	.837	.829

According to Skarmeas et al. (2014), this outcome indicates that there is a general asymmetry in the various relationships among variables. Thus, the causal conditions produced by the alternative combinations may lead to the same outcome condition (Woodside, 2013). Using fsQCA this study examines the formulation of online purchasing tourism and hospitality intentions by estimating the complex antecedent conditions (i.e. causal recipes) leading to high membership in the eight statements discussed previously. Figure 11.1 shows graphically the underlying research model and the relationships expected to emerge among the statements. The theoretical justification of the model constructs as well as the determination of its hypotheses (with the full deployment of its linear analysis), are presented in Pappas (2017).

While traditional analysis considers arrows in the context of linearity, in the present case non-linear complex solutions (i.e. causal recipes) are of importance as depicted by the level of membership scores. In fact, as Woodside and Zhang (2013) indicate, the membership score of a case in a recipe is the membership degree of simple causal conditions of fuzzy-sets that intersect and include the recipe. In the causal recipe, this intersection is the minimum score amongst the selected simple conditions (Skarmeas

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et al., 2014). Based on complexity, the study assumes that instead of having symmetrical net effects, asymmetric relationships exist.

According to Woodside (2014: 2499) the asymmetric measure of consistency is analogous to the symmetric measure of correlation, whilst the asymmetric measure of coverage is analogous to the symmetric coefficient of determination.

When examining model acceptability, the provided solution is considered informative when coverage is between .25 and .75 and consistency is above .74 (Skarmeas et al., 2014).

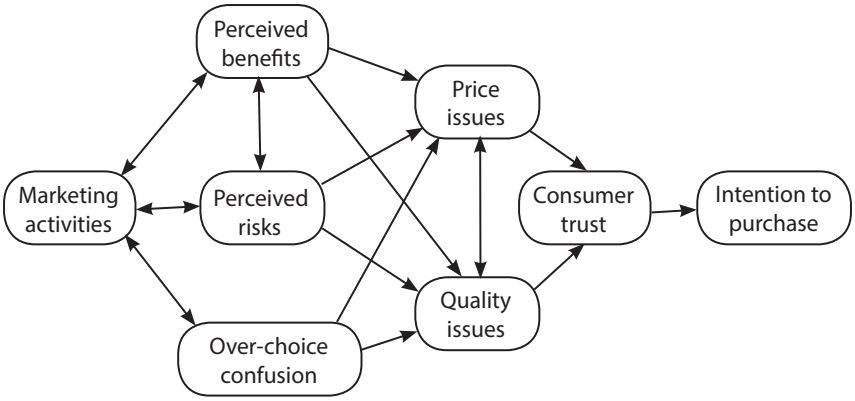

Figure 11.1: The Research Model Architecture. Adapted from Pappas (2017)

Results

Implementation of fsQCA algorithms

Having the above in mind, the study evaluates the causal recipes (or complex antecedent conditions) that provide a high membership. Using non-linearity, the study highlights combined complexities and identifies asymmetric relationships. The research includes the perspectives of 735 respondents, and its calibration has been implemented by a group of 47 randomly selected individual cases. The calibrated fuzzy sets used were 'f_ma' for marketing activities; 'f_pb' for perceived benefits; 'f_pr' for perceived risks; 'f_oc' for over-choice confusion; 'f_pi' for price issues; 'f_qi' for quality issues; 'f_ct' for consumer trust; and 'f_ip' for intention to purchase.

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Table 11.3: Complex solutions

Complex Solution Findings	Raw Coverage	Unique Coverage	Consistency
Marketing Activities			
Model: f_ma=f(f_pb,f_pr,f_oc)			
f_pb*f_pr*~f_oc	0.429	0.076	0.869
f_pb*~f_pr*~f_oc	0.396	0.113	0.873
Solution Coverage: 0.414			
Solution Consistency: 0.833			
Perceived Benefits			
Model: f_pb=f(f_ma,f_pr)			
f_ma*f_pr	0.482	0.483	0.849
Solution Coverage: 0.482			
Solution Consistency: 0.850			
Perceived Risks			
Model: f_pr=f(f_ma,f_pb)			
f_ma*~f_pb	0.521	0.528	0.859
Solution Coverage: 0.521			
Solution Consistency: 0.859			
Price Issues			
Model: f_pi=f(f_pb,f_pr,f_oc,f_qi)			
f_pb*f_pr*~f_oc*f_qi	0.403	0.089	0.830
f_pb*f_pr*f_oc*~f_qi	0.328	0.079	0.818
Solution Coverage: 0.383			
Solution Consistency: 0.814			
Quality Issues			
Model: f_qi=f(f_pb,f_pr,f_oc,f_pi)			
f_pb*f_pr*f_oc*~f_pi	0.393	0.089	0.814
~f_pb*f_pr*~f_oc*f_pi	0.439	0.113	0.820
f_pb*f_pr*~f_oc*f_pi	0.372	0.083	0.809
Solution Coverage: 0.517			
Solution Consistency: 0.815			
Consumer Trust			
Model: f_ct=f(f_pi,f_qi)			
f_pi*f_qi	0.508	0.508	0.884
Solution Coverage: 0.508			
Solution Consistency: 0.884			

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Sufficient complex statements for marketing activities

In terms of marketing activities, the complex solution reveals two pathways (Table 11.3). The first concerns the combination of high influence of perceived benefits and risks with low influence (denoted by ~) from over-choice confusion. The consistency of this pathway is good (0.869), explaining a considerable amount of marketing activities (coverage=0.429). The second solution reveals that high perceived benefits with low perceived risks and low over-choice confusion lead to high membership scores for marketing activities. This pathway is slightly more consistent than the previous one (consistency=0.873), but explains fewer cases of marketing activities (coverage=0.396). In total, the marketing activities solution indicates a fairly high consistency (0.833) and coverage (0.414).

Sufficient complex statements for perceived benefits and risks

As illustrated in Table 11.3, the complex solution revealed only one pathway concerning perceived benefits. This pathway suggests that high marketing activities and perceived risks lead to high membership scores for perceived benefits. The consistency of this pathway is good (0.850) also having a considerable inclusion of cases (coverage=0.482).

As in perceived benefits, the complex solution revealed only one pathway in perceived risks. More specifically, the results indicate that high marketing activities and low perceived benefits produce high membership scores for perceived risks. This solution is also characterised by fairly good consistency (0.859) and the highest coverage (0.521) produced by any other complex solution.

Sufficient complex statements for price and quality issues

There are two complex solutions produced in terms of price issues. The first solution proposes that high perceived benefits and risks, and high quality issues with low over-choice confusion result in high price issues. This solution is fairly consistent at 0.830 and has a good coverage at 0.403. The second solution suggests that high perceived benefits, risks and over-choice confusion with low quality issues also result in high price issues. This complex solution gives a slightly lower consistency (0.818) than the previous one, also having a lower coverage (0.328). The solution as a whole has a good consistency at 0.814 and high coverage at 0.383.

Quality issues seem to generate most of the complex solutions. The fist solution suggests that high perceived benefits, risks and over-choice

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confusion with low price issues can produce high quality issues. The consistency of this solution is at 0.814 and its coverage at 0.393. The second solution indicates that high perceived risks and price issues with low perceived benefits and over-choice confusion lead to high membership scores for quality issues. This solution presents the highest consistency (0.820) and coverage (0.439) of the three generated in quality issues. The last solution suggests that high perceived benefits, risks and price issues with low over-choice confusion result in high quality issues. In contrast with the previous solution, this one generates the lowest consistency (0.809) and coverage (0.372) levels. Overall, the solution consistency is good (0.815) also providing a high coverage (0.517).

Sufficient complex statement for consumer trust

The findings provide one more complex solution, this time focusing on consumer trust. The last complex solution indicates that high price and quality issues provide high membership scores in consumer trust. This pathway appears to have the highest consistency (0.884) from all other complex solutions in this research. It also has a high coverage rate (0.508).

Based on the model architecture of Figure 11.1 and since confusion by over-choice and intention to purchase are solely determined by one factor (i.e. marketing activities and consumer trust respectively) no sufficient complex statements have been estimated in these cases.

Discussion

The results presented above set the foundations for an interesting discussion. In terms of marketing activities, perceived benefits are included in both complex solutions highlighting their importance for the consumers' online decision-making in tourism and hospitality. This finding is in agreement with Pescher et al. (2014) and Leenders and Wierenga (2008). On the other hand, perceived risks do not appear in both derived solutions, i.e. perceived risks do not always influence marketing activities related to tourism products. In addition, over-choice confusion is absent from both derived recipes. The two latter findings contradict Pantano et al (2013) and suggest that the fundamental relationship encapsulates marketing activities and perceived benefits, whilst in some cases perceived risks are also included in this complex solution. They also highlight how marketing activities are influenced by the three fundamental aspects (i.e.

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perceived benefits, risks, and over-choice confusion) that subsequently impact on price, quality and consumer trust and ultimately affect purchasing intentions of online tourism consumers as shown in Figure 11.1.

Concerning perceived benefits, the combination of both antecedent conditions (i.e. marketing activities and perceived risks) is necessary to shape their influence in online tourism and hospitality shopping. This pathway is in line with Marom and Seidmann (2011) considering the beneficial effects of online shopping, and Dholakia (2001) regarding the inclusion of perceived risk in all purchasing decisions. On the other hand, the provided solution for perceived risks indicates their association with marketing activities, while perceived benefits are excluded from the derived recipe. This finding further highlights the importance of perceived risks in decision making as suggested by Dholakia (2001) and the influential mitigating role of marketing activities as pinpointed by Nerkar and Roberts (2004). These results contribute to the better understanding of perceived risks' role and importance for online tourism and hospitality shopping, and further clarify their relationship and influence on perceived benefits and marketing.

Price issues findings reveal that perceived benefits and risks appear in both pathways, making them the necessary antecedent conditions for price-oriented perception formulation. Nonetheless, when over-choice confusion appears (first recipe), quality issues are excluded and vice versa (second recipe). The findings indicate that all three fundamental aspects (i.e. perceived benefits, risks, and over-choice confusion) can influence price issues, while in some cases over-choice confusion does not affect purchasing decisions. Similarly, findings in quality issues have revealed three pathways. The only antecedent simple condition that appears in all derived recipes is the perceived risks. Conversely, perceived benefits and price issues appear in two out of the three solutions, while over-choice confusion is included only in one of them. This makes the latter condition the weaker one regarding its influence on quality issues compared to the other three. The significance of perceived risks indicates their importance for quality perceptions. In addition, when all three fundamental aspects (perceived benefits, risks, and over-choice confusion), impact upon quality, the price issues are absent. Thus, the relationship affecting price and quality as discussed by Ahn et al. (2004), and theoretically supported by the price-quality nexus, which suggests that customers use price to

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evaluate overall product superiority or excellence (Lichtenstein et al., 1993; Zeithaml, 1988), is not always confirmed by the present research.

The quality issues findings also reveal a mutually exclusionary role of over-choice confusion and price issues. This result contradicts Pappas (2017), who suggests that over-choice confusion has a direct significance for the formulation of quality issues, and affects both price and quality aspects. As the pathways indicate, the influence of the three fundamental factors and price issues upon quality issues is dependent on their combination and the extent they are included in decision-making, except for perceived risks that play an important role in all derived recipes.

Finally, the produced solution concerning consumer trust includes the combination of both price and quality antecedent conditions. This result confirms previous studies such as Bente et al. (2012), Pappas (2017), and Zhang et al. (2014). This recipe also has the highest consistency that appears in this research, showing the importance of these two factors in building consumer trust, and ultimately affecting customer intentions to purchase online tourism products.

QCA versus regression

As mentioned, most tourism studies evaluate statistical relationships from a linear perspective predominantly using structural equation modelling (SEM) and regression analysis. Thus, this paper implements additional analysis to compare QCA research findings with regression as extensively discussed in Pappas (2017). As Ordanini et al. (2014) suggest, any comparison should be made with caution since QCA implements distinct assumptions like complex causality; establishes relations by using cases instead of variables; focuses on different research objectives; and identifies configurations that provide sufficient and necessary conditions for a result of interest. If the provided comparison is not carefully implemented these aspects are possible to lead in meaningless outcomes.

In a nutshell and as discussed in Pappas (2017), the linear analysis shows that the Kaiser-Meyer-Olkin of Sampling Adequacy measure is 0.863, and the overall reliability measured through Cronbach α is .816, while all variables score over .8. All effects are statistically significant, while the overall model's R^2 is .521, and all expected associations are confirmed. More specifically, marketing activities have a positive interactive relationship with perceived benefits (β=.422; p<.01), and negative

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interdependence with perceived risks (β=-.357; *p*<.01) and over-choice confusion (β=-.186; *p*<.01). Perceived benefits positively affect prices (β=.314; *p*<.01) and quality issues (β=.280; *p*<.05), whilst the influence of perceived risks on price (β=-.327; *p*<.01) and quality issues (β=-.206; *p*<.05) is negative, as are the impacts of over-choice confusion (β=-.185; *p*<.05 and β=-.231; *p*<.01). In addition, perceived benefits and risks influence each other (β=.215; *p*<.05). Consumer trust is directly affected by price (β=.385; *p*<.01) and quality issues (β=.408; *p*<.01), while price and quality also affect each other (β=.219; *p*<.05). Finally, the linear analysis confirms the important positive impact of consumer trust on the intention to purchase (β=.411; *p*<.01). Comparing the results of the regression analysis with those from the QCA the appropriateness of the latter is clear. More specifically, the study of Pappas (2017) employs regression, which limits itself to the consideration of a single pathway, i.e. the joint linear direct effect of perceived benefits, risks and over-choice confusion on price and quality issues as well as on the interrelationship between price and quality. This indicates the inability of regression to encapsulate the full range of alternative combinations and influences that are capable of producing the same outcome, which is actually an inherent feature of complexity concerning decision-making formulation. For example, as highlighted in Table 11.3, the first fsQCA solution in price issues does not involve over-choice confusion (f_pb*f_pr*~f_oc*f_qi), whilst the second one does not include quality issues (f_pb*f_pr*f_oc*~f_qi), when, on the other hand, both are required by SEM. Furthermore, it is the fsQCA's sufficient configurations that exclude these conditions (one per solution), whilst in the study of Pappas (2017) SEM analysis indicates that the online decision-making process appears to be considerably dependent on those two aspects (over-choice confusion: β=.185/*p*<.05; qualitgy issues: β=.219/*p*<.05). The comparison reveals that regression analysis can only partially explain the relationships between the examined constructs; on the other hand, QCA identifies complex relationships that cannot be encapsulated by the linear regression analysis.

Fit and predictive validity

Most studies focusing on the evaluation of specific models examine the model fit (Gigerenzer & Brighton, 2009) to ensure that the data support the relationships amongst the observed variables and their respective factors (Pappas, 2017). Thus, only a few studies focus on predictive validity

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(Roberts & Pashler, 2000; Wu et al., 2014), since a good fit to observations does not necessarily indicate the existence of a good model (Gigerenzer & Brighton, 2009). The model's predictive validity ensures the configural model's predictive ability using a separate sample (Olya et al., 2018). This study also focuses on the estimation of the predictive validity. To test it, the process discussed by Wu et al. (2014) is followed: the research sample is divided in a holdout and a modelling subsample which is half the overall sample, since the patterns of job vulnerability are perceived as consistent indicators to produce high scores. The overall consistency exceeds .8 (C1=.823) and the coverage exceeds .5 (C2=.518). The results indicate that the model has good predictive validity.

Managerial challenges and applications

Regarding managerial aspects, the most important implication concerns the marketing strategies of tourism and hospitality e-retailers. As also emphasised by Nerkar and Roberts (2004) marketing activities can significantly influence and alter consumer perspectives in terms of products' and services' performance. As a new challenge, companies should clearly emphasise the promotion of tourism online product benefits, and strengthen their branding through direct online marketing. This may include the distribution of information via personal e-mails to potential or previous customers in terms of new products and services, optimisation of existing products, and forthcoming offers and events. This promotional activity can also include aspects of risk reduction combined with the beneficial impacts of online tourism and hospitality shopping. Another challenge could be the provision of product and e-vendor comparison of information and characteristics with other similar products and e-vendors existing in the market.

While in some cases the present research indicates gaps in the importance of price and quality, their significance as determinant factors remains strong. As a result, managers should closely examine their consumers' characteristics, regularly monitoring the formulation and alteration of their perceptions and preferences in the selection of both products and e-vendors. As indicated by the findings, the cornerstone for online purchasing remains the trust of consumers in e-vendors and products. Thus, it is imperative for enterprises engaged in online sales to provide specific services that reduce consumer uncertainties. Due to

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the intangibility of tourist and hospitality products these could include ad hoc information about destinations and products, post-purchase services, quality guarantees, accommodation characteristics etc. In this way, e-retailers will become able to better accommodate their customers, instil them with confidence and trust, and show genuine care for them.

Conclusion

This study has used fsQCA to examine complexity in online tourism and hospitality shopping. Italso provides a comparison of fsQCA use with regression, which is the dominant linear analysis method adopted in the tourism and hospitality sector, pinpointing the efficiency of the former in dealing with complex attributes, since it analyses cases instead of variables. It also demonstrates its predictive validity, something that only a handful of service related studies have done so far (Roberts & Pashler, 2000), highlighting the possible superiority of the provided models.

Despite the study's theoretical and methodological contribution, several limitations need to be highlighted. Since the implementation of fsQCA in tourism and hospitality is relatively new, the full potential of fsQCA is not yet realised, as this can only be assessed by implementing it in multiple tourism contexts involving chaos and complexity theories. A second aspect derives from the evaluation of different attributes, since this can produce different outcomes. Thus, it is advisable to implement the research with caution if other influential factors of tourism and hospitality (e.g. consumer familiarity with online bookings; the level of sophistication of the online bookings environment, and the e-vendor's platform ease of use) are to be examined. Third, the current study did not classify the informants in specific categories (e.g. according to socio-demographic characteristics), since its aim was to holistically examine the attributes affecting tourism online purchasing intentions, and introduce fsQCA as an innovative methodology in tourism, thus fruitfully capitalising on the extensive linear analysis discussed in Pappas (2017). While such a classification can be implemented at different model stages (as shown in Figure 11.1), its present application would immensely complicate the comparison of linear with asymmetric analysis thus making it more difficult to meet an important objective of this paper. Therefore, a comparative research between online and offline consumers or tourists living

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in other regions and countries with different Internet access, or a comparison of online buyers with respect to their individual characteristics (such as gender, age, cultural characteristics, available disposable income for tourism activities, accommodation preference, level of education etc) may produce different outcomes. Still, the present study may provide an interesting benchmark for the formulation of e-consumer behaviour and purchasing process of tourism and hospitality products online.

Highlights

- ☐ The chapter examines the attributes' complexity on tourism online purchasing intentions.
- ☐ It compares linearity with asymmetry using Qualitative Comparative Analysis.
- ☐ The research progresses from fit to predictive validity.
- ☐ Marketing, benefits/risks, price/quality, and trust produced complex statements.
- ☐ The results suggest that QCA is more suitable than regression in tourism research.

Questions

1. Why tourism and hospitality research is advisable to focus on complexity examination?
2. Does the examination of complexity in tourism and hospitality research make the linear analysis obsolete?
3. Can you identify a couple of aspects dealing with destination management that should be studied under the complexity perspective?

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