UK outbound travel and Brexit complexity

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ABSTRACT

This article evaluates the impact of Brexit on Londoners' outbound travel intentions. It embeds a comparative study as it employs two research studies, before (N = 307) and after (N = 278) the Brexit referendum. Using fuzzy-set Qualitative Comparative Analysis, the results highlight the pre- and post-referendum change in impact to overseas travel intention concerning price and quality issues, destination selection motivations, and perceived risks. They further establish the significance of travel importance, age, and annual income with regard to outbound decision-making. The research also compares the results with the dominant linear analysis modes (regression; Cramer's V), highlighting nonlinearity as the most appropriate for the examination of complexity aspects, and further progresses from fit to predictive validity.

1. Introduction

During the last decade, numerous external critical events (e.g. terrorist strikes, the SARS pandemic, the economic crisis), have had a significant effect on travel and tourism demand (Hajibaba, Getzel, Leisch, & Dolnicar, 2015; Saha & Yap, 2014). General concerns and risk perceptions related with specific countries may have an extensive influence on travel decision-making (Fischhoff, De Bruin, Perrin, & Downs, 2004), something that is likely to be significantly increased by reports from media (Chew & Jahari, 2014). Nevertheless, not all events have an equal influence on all travelers, since they evaluate risk aspects with a different way (Pizam & Fleischer, 2002).

Up until now, the result of the Brexit referendum has had few direct effects on the tourism market, but led to a substantial fall in the British pound and decline in the share price of tourism and hospitality companies (Costa, 2017). Brexit's actual effects are still unknown, since the triggering of Article 50 (initiation of negotiations for exiting the European Union) only took place at the end of March 2017, while the whole process is expected to last for at least two years. Due to Brexit, the potential for Scotland's separation from the UK through a new independence referendum (MacAskill, 2017), and political instability in Northern Ireland (Foster, 2017) have increased the uncertainty in the British outbound travel and tourism market (Trend, 2017). However, the complexity of British tourists' outbound dynamics and the reorientation of travel decision-making needs to be further examined, since it can provide substantial evidence for the influence of an event on the travel and tourism domain.

The paper examines the underlying decision-making complexity in travel decision-making, using Brexit as a case study. Based on the results of a comparative study, before and after the Brexit referendum, of Londoners' overseas traveling intentions, the research studies the implications of the referendum results in terms of motivational impacts, price and quality issues, perceived risks, and the selection of destinations. The study contributes in both, theoretical and methodological domains. From a theoretical point of view, the article contributes to the literature by enhancing our understanding of the complexity of travel decision-making initiated by a specific event. It both cases (pre and post referendum) it provides multiple behavioral pathways that can lead to the same outcome (in our case, travel decisions), also encapsulating the alterations on consumer focus due to a specific event's occurrence (Brexit). Moreover, from a methodological point of view, the study employs fuzzy-set Qualitative Comparative Analysis (fsQCA), which is considered to be an innovative tool in tourism, and generally in the service sector. In travel and tourism the linear methods of analysis are the ones that are extensively used, since the relevant research is predominantly based on a reductionist approach. This is also the first study (to the best of the author's knowledge), not only in the tourism but in the service sector generally, to employ fsQCA for pre and post evaluation of a specific event. On this basis, one of the primary objectives of the research is to highlight the suitability of the nonparametric (nonlinear) analysis of travel and tourism against the dominant linear analyses (regression/Structural Equation Modeling; Cramer's V). Furthermore, the study contributes by progressing from fit to predictive validity for the models concerned, since only a handful of studies in travel and tourism proceed to the evaluation of model predictability.

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2. A brief Brexit overview

The discussion concerning the perspective of the United Kingdom to be a member of the European Economic Community (currently EU) is considered as one of the most diverse and interesting for more than half of a century (Cooper, 2017). Over 30 million UK nationals have voted in a referendum, which was held on 23rd June 2016, and was dealing with the continuation of UK in EU as a member state. The results have revealed that a slim majority of UK nationals (51.8 percent), wanted the UK to exit the EU (Hunt & Wheeler, 2016). This has resulted to a sharp fall in UK sterling just after this decision, also increasing the travel and tourism costs at least by 22 per cent, and the average cost per person holidaying in a European country by £429 over comparative costs the previous year (Collinson & Jones, 2016). Concerning overseas travel, the decision for Brexit has also introduced a considerable number of risk relates issues concerning: higher airfares, the future of borderless travel, lower compensation for delayed flights, a weaker (at least in the short-term) sterling, changes to reciprocal health benefits dealing with the European Health Insurance Card (EHIC), more expensive roaming charges for shell phones, worse holiday protection, and the loss of the right to bring back in UK virtually unlimited amounts of duty paid products and goods imported from the EU (Trend, 2017). These issues appeared even before Article 50 was triggered from the UK Government initiating the negotiations for a period of two years concerning the UK exit from the EU.

3. Chaos and complexity

Chaos theory was introduced in 1963 (Lawrence, Feng, & Huang, 2003) and proved useful to the analysis of complex systems (Mahmoudabadi, 2015). Seeger (2002, p. 329) suggests that chaos "proposes a broad set of loosely related theoretical and meta-theoretical orientations to the behavior of complex nonlinear systems". The theory indicates that even small behavioral differences can generate significant diverging outcomes to dynamic systems making it impossible to predict long-term patterns (Kellert, 1993). This is because a chaotic system is characterized by nonlinearity and sensitively depends on initial conditions (Göksu, Kocamaz, & Uyaroglu, 2015). The theory of chaos recognizes the complex, unpredictable, random, and dynamic nature of systems, and although denying those systems' predictability, it does not suggest that they are inevitably random and disordered (Speakman & Sharpley, 2012).

Complexity theory evolved from the theory of chaos. It concerns research with complex characteristics, and "deals with systems that have many interacting agents and although hard to predict, these systems have structure and permit improvement" (Zahra & Ryan, 2007, p. 855). Within a system characterized by complexity, the interactions are nonlinear, resulting in the implication that change in one systemic component may result to a negligible or substantial effect of the whole system (Byrne & Callaghan, 2014). Due to its nonlinearity, over time, small systemic differences are able to lead to considerably different emergent whole system properties (Room, 2011). An intervention or event may trigger changes to a complex system, and even if the prediction is difficult on how the system may change in response to the intervention/event it is important to observe its shift and define its new 'phase space' (Room, 2011; Walton, 2014).

Both, chaos and complexity theories are focused on nonlinear systems with high sensitivity to initial conditions (Hock, 1999); their difference is that in the theory of chaos there can be no forecast, while in complexity theory this behavioral unpredictability may be framed into a quasi-stable pattern (Olmedo & Mateos, 2015). While both theories have been extensively employed in the context of generic management studies, their implementation in travel and tourism remains limited (Papatheodorou & Pappas, 2017). In fact, travel and tourism research has not sufficiently investigated the theories of chaos and complexity because it has followed, until now, a predominantly reductionist

approach (McDonald, 2009). The decision-making of travelers and tourists depends on several factors able to create complex patterns in its formulation (Pappas, 2017; Smeral & Wugner, 2005). Therefore, the extent of behavioral complexity renders Newtonian (parametric) thinking insufficient and suggests a need for nonparametric (nonlinear) analysis (Laws & Prideaux, 2005). As a result, with special reference to periods of turmoil and high unpredictability, when complexity theory is employed, substantial information concerning travel and tourist behavior can be provided (Russell & Faulkner, 2004), helping to further comprehend the changing dynamics (Faulkner & Russell, 2000).

4. Study tenets

In service sector research when we use the term 'tenet' we refer to testable precepts dealing with the order of identification of conditions characterized by complexity (Papatheodorou & Pappas, 2017). Statistical hypotheses and consistency metrics are not likely to be involved where outcome scores are being used for the adequacy determination of complex configurations (Wu, Yeh, Huan, & Woodside, 2014). In configuration theory, in terms of factor arrangement, the same set of causal factors can lead to different outcomes (Ordanini, Parasuraman, & Rubera, 2014). This study evaluates the impact of the Brexit referendum on Londoners' travel intention attributes, as highlighted by the relevant literature (Abubakar & Ilkan, 2016; Albayrak & Caber, 2013; Law, Rong, Vu, Li, & Lee, 2011; Lu, Hung, Wang, Schuett, & Hu, 2016; Quintal, Lee, & Soutar, 2010; Sanchez, Callarisa, Rodrıguez, & Moliner, 2006; Sinkovics, Leelapanyalert & Yamin, 2010; Tarnanidis, Owusu-Frimpong, Nwankwo, & Omar, 2015). Therefore, the binary states (presence or absence) of issues dealing with travel intention decision-making by Londoners with regard to the Brexit referendum were evaluated. Along with the respondents' socio-demographic characteristics (travel importance, age, and annual household income) the five examined attributes were: motivation, quality issues, price issues, destination selection, and perceived risks, and. The study created six tenets:

T1 The same attribute is likely to determine a different decision for travel intention depending on its interaction/configuration with other attributes.

T2 Recipe principle: When a complex configuration is created by two or more simple conditions, an outcome condition can have a consistently high score.

T3 Complex interactions/configurations may influence the decision-making of travel intentions.

T4 Within different combinations the simple conditions of interactions/configurations can positively or negatively affect the travel intention decision-making.

T5 Equifinality principle: A sufficient travel intention is not always the result of a high outcome score.

T6 When the Y scores are high, a given recipe for the travel intention decision-making is not relevant for all cases.

5. Brexit and travel intentions

The literature suggests that specific events can significantly influence travel choices, since they impact on the motives of travelers, resulting in different intentions of travel (Arentze & Timmermans, 2009). These events can have a strong impact upon the action process of consumer behavior, and the type of tourism and travel services and products consumed (Lu et al., 2016). Britain's referendum decision to exit the European Union (EU) has substantially increased the financial and political uncertainty in the country (McConnell, Kuus, Jeffrey, Crawley, Williams & Smith, n.d.), and these two factors were seen to have the strongest effect on international travel patterns and tourism in the period 1970 to 2010 (Hall, 2010). According to Scheiner (2014) the theoretical underpinning is that travel behavior is relatively habitual

when daily requirements, needs and conditions are stable, but the behavior of individuals can change when new circumstances and conditions are adopted.

In traveling, the higher the perceived risks (social, physical, performance, time, financial, and psychological) when visiting a destination, the lower the intention to travel is likely to be (Quintal et al., 2010; Williams & Balaz, 2015). This is connected with the aspect that travelers tend to select destinations with the lowest possible risks and costs (Seabra, Dolnicar, Abrantes, & Kastenholz, 2013), while specific events (such as Brexit) are likely to increase the extent of risk perceptions (Fuchs, Uriely, Reichel, & Maoz, 2012). However, Gilovich, Kerr, and Medvec (1993) indicated that people tend to feel more confident and take greater risks in terms of events that occur in the more distant future, while Nussbaum, Trope and Liberman (2003) showed that temporal distance influences the confidence of individuals concerning future events. As a result, specific situational changes accompany relevant changes in attitude leading to an inconsistency towards intention and behavior (Kah, Lee, & Lee, 2016).

Tourists visit a destination by taking rational decisions in terms of the benefits and costs of a spectrum of alternative destinations, derived from external information sources (Chen, Shang, & Li, 2014; Abubakar & Ilkan, 2016). Nevertheless, specific events can generate attributional changes and transform the decision-making in travel (Albayrak & Caber, 2013), while alterations to specific conditions (e.g. job vulnerability, economic and political uncertainty) in tourism origins deeply affect the travel intentions of the people living there (Papatheodorou & Pappas, 2017). For example, the result of Brexit referendum has raised fears of extensive job losses (Proctor, 2017), generated political uncertainty at least in the mid-term (Allen, 2016; McConnell et al., n.d.), and substantially increased the costs of traveling abroad due to the considerable fall in the value of UK sterling (Collinson & Jones, 2016). All of the above contribute to a complex and uncertain environment, which is likely to affect the outbound travel intentions of people living in the UK.

6. Methods

6.1. Participants

The research studies included on adult London residents. The research held before the referendum was conducted between the end of May and mid-June 2016, and the study after the referendum started just after the referendum results were released (24th June) and ended in mid-July 2016. Originally, only the first part of research was planned, since the study intention was to examine Londoners' overseas travel decision-making, and not the impact of the referendum outcome. However, the Brexit decision led to a repetition of the research in an attempt to measure any behavioral changes after the referendum. The selection of the respondents was made by using a purposive sampling method at four major London train stations. As the Office of Rail and Road (2015) suggests, the 2014/2015 busiest UK train stations were all in London: Victoria, Waterloo, London Bridge, and London Liverpool Street. Recruiting participants in communal areas like train stations is a common practice for researchers aiming to minimise the survey bias, as long as the sites' dispersion is adequate to provide an analogical coverage of the population under examination (Hamilton & Alexander, 2013; Pappas, n.d.). All the aforementioned train stations are connected with the London underground, thus including respondents in the sample who travel within London limits. Following the researches of Gursoy, Chi, Ai, and Chen (2011), and Kaplanidou et al. (2013), the process of data collection has resulted in a trend study approach, meaning that the studies have used two demographically similar samples, instead of examining the same participants across time. More specifically, the second study has selected the respondents in accordance with the sample socio-demographics (travel importance; age; annual income) occurred in the initial one (Table 1). In an effort to

Table 1
Socio-demographics.

	Pre-referendum		Post-referendum	
	N	%	N	%
Travel Importance				
Not Important	82	26.7	65	23.4
Important	225	73.3	213	76.6
Age				
18–35	109	35.5	100	36
36–50	117	38.1	106	38.1
Over 50	81	26.4	72	25.9
Annual Income				
Less than £50000	200	65.1	185	66.5
Over £50000	107	34.9	93	33.5

further ensure the comparability of samples, both researches were held on weekdays (Monday till Friday) during off peak hours (from 10:00 till 16:00).

6.2. Determination and collection of sample

Akis, Peristianis, and Warner (1996) suggest that when the population proportions are unknown, a conservative response format of 50/50 (i.e. assuming that 50 per cent of the respondents have negative perceptions, and 50 per cent positive) should be selected in order to determine the size of the sample. As highlighted by Akis et al. (1996), the minimum level of confidence should be 95 per cent, and the maximum sampling error should be five per cent. Sekaran and Bougie (2009) indicate that the cumulative probability (Z) given by t-table is 1.96 when dealing with studies with the aforementioned level of sampling error and confidence. Thus, the sample size is determined as follows:

$$N = \frac{Z^2(hypothesis)}{S^2} \Rightarrow N = \frac{1.96^2(0.5)(0.5)}{(0.5)^2} \Rightarrow N = 384.16$$
$$\textbf{Rounded to 400}$$

The estimation of the sample size does not dependent on the total size of the population; hence the error is determined by the sample size (Aaker & Day, 1990). For each research study, 100 London residents were approached in each of the four train stations (400 people per station). The pre-referendum research consists of 307 usable questionnaires (response rate: 76.75 per cent), while 278 usable questionnaires are in the second study (response rate: 69.5 per cent).

6.3. Measures

The questionnaire was based on previous studies. More specifically, the statements examining motivation were adopted from Law et al. (2011). Studies by Sanchez et al. (2006) and Tarnanidis et al. (2015) were used for the price issues. The statements concerning quality issues were taken from Sanchez et al. (2006) and Sincovics et al. (2010). Perceived risks were measured following the study by Quintal et al. (2010). The statements for destination selection were adopted from Albayrak and Caber (2013), while relevant statements from the studies of Abubakar and Ilkan (2016) and Lu et al. (2016) were used for the examination of travel intention. In addition, three socio-demographics (Importance of Traveling Every Year [Law et al., 2011]; Age [Albayrak & Caber, 2013; Abubakar & Ilkan, 2016]; Annual Household Income [Law et al., 2011; Abubakar & Ilkan, 2016]) were included in the questionnaire. The mean annual household income in London is estimated to be £51,770 (Hill, 2015), therefore the research threshold was set at £50,000.

To encapsulate the essence of the complexity, fuzzy-set Qualitative Comparative Analysis (fsQCA) was used. fsQCA evaluates the relationships expected to shape the interest outcome and any possible

binary set of combinations produced from its predictors (Longest & Vaisey, 2008). This technique is considered as a mixed-method, because it combines qualitative inductive reasoning generated by the implementation of case analysis (Ragin, 2000), with quantitative empirical testing (Longest & Vaisey, 2008). The method assesses logical complexity through the acknowledgement that different outcomes are likely to be generated by alternative combinations of characteristics when they are appropriately combined with some other conditions or events (Kent & Argouslidis, 2005). Moreover, the research estimates negated sets; e.g. presence or absence of a specific condition (Woodside & Zhang, 2013). A membership score in a negated set is calculated by taking one minus the membership score of the evaluated case in the original fuzzy-set (Skarmeas, Leonidou, & Saridakis, 2014).

According to Ordanini et al. (2014) in set theory, the consistency of a fuzzy measure sub-relation emerges when the membership scores in a specific attributional causal set are systematically less or equal with the scores of membership in the outcome set. As the same study indicates, coverage embeds the evaluation of the empirical importance of those sufficient configurations. Therefore, consistency and coverage are calculated as follows:

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

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

where, for travel intention i, X_i is the membership score in the X configuration and Y_i is the membership score in the outcome condition.

The asymmetric consistency metric is analogous to the symmetric correlation metric; similarly, the asymmetric coverage metric is analogous to the symmetric determination of coefficient (Woodside, 2014). When the solution of the model(s) coverage is between 0.25 and 0.75, and the consistency of the solution is above 0.74, the configuration is considered acceptable and informative (Skarmeas et al., 2014). Furthermore, the membership score of a complex antecedent condition (causal recipe) is defined as the membership scores' minimum of the intersecting selected simple causal conditions of fuzzy-sets that include the specific recipe (Skarmeas et al., 2014; Woodside & Zhang, 2013).

Using an aggregation (i.e. grouping) process for the 31 statements around the six constructs, Table 2 reports the correlation results among the latter for both, pre- and post-referendum research studies. The items derived from the data in Table 2 are, the factors identified in Table 5. Skarmeas et al. (2014) suggest that in a correlation matrix when the absolute value of all the coefficients is less than 0.60, then a general asymmetry exists in the respective relationships among variables. Table 1 highlights that this is indeed the case here for both research

Table 2
Correlation matrix.

	Pre-referendum	1	2	3	4	5	6
1	Price Issues	1					
2	Quality Issues	.000[a]	1				
3	Perceived Risks	-.070[a]	.015[a]	1			
4	Destination Selection	-.024[a]	-.018[a]	.179[b]	1		
5	Motivation	.013[a]	.045[a]	-.209[b]	-.108	1	
6	Travel Intention	-.007[a]	.058[a]	-.193[b]	-.060	.211[b]	1
	Post-referendum	**1**	**2**	**3**	**4**	**5**	**6**
1	Price Issues	1					
2	Quality Issues	-.023[a]	1				
3	Perceived Risks	-.059[a]	.011[a]	1			
4	Destination Selection	-.009[a]	-.002[a]	.175[b]	1		
5	Motivation	.031[a]	.029[a]	-.162[b]	-.105[a]	1	
6	Travel Intention	.016[a]	.090[a]	-.183[b]	-.088[a]	.188[b]	1

[a] Correlation is significant at .05 level.
[b] Correlation is significant at .01 level.

studies, meaning that the causal conditions produced by the alternative combinations may lead to the same outcome condition (Woodside, 2013). Using fsQCA this study, therefore, examines how Londoners' travel intentions (related to the sixth construct) are made based on the complex antecedent conditions (i.e. causal recipes) that lead to scores of high membership in the other five constructs, including the examined socio-demographic characteristics. Based on nonlinear analysis, the study places special emphasis on the description of combined complexities and the identification of asymmetric relationships.

7. Results

The descriptive statistics of the study are presented in Table 3. The statements were named in accordance with the construct they belong to (M: Motivation; PI: Price Issues; QI: Quality Issues; PR: Perceived Risks; DS: Destination Selection; TI: Travel Intention). The full statements are presented in Table 5. As highlighted in the "sample determination and collection" section, the first (pre-referendum) study involved 307 participants, while the second one (post-referendum) consisted of 278 respondents. Their calibration is implemented by a group of 32 and 30 randomly selected individual cases respectively. For the evaluation of Londoners' travel intentions (f_ti) the calibrated fuzzy-sets used were named "f_m" for motivation; "f_pi" for price issues; "f_qi" for quality issues; "f_pr" for perceived risks; and "f_ds" for destination selection. The socio-demographics were named "f_tri" for travel importance; "f_a" for age; and "f_ai" for annual household income. The additional inclusion of an antecedent is highlighted by the use of "*", and the absence (i.e. negation – low inclusion level) of a specific attribute is indicated by the use of the symbol ' ~ '. For example, "f_qi* ~ f_pr" would mean high outcome score for quality issues and low inclusion level for perceived risks. All configurations include and combine all set antecedents, while their sufficiency is determined by the generated level of consistency.

7.1. Sufficient complex statements

The implementation of fsQCA generated three complex solutions (Table 4) for each research study (pre- and post-Brexit referendum). Concerning pre-referendum results, the first sufficient configuration (f_tri*f_a* ~ f_ai*f_m* ~ f_pi* ~ f_qi*f_pr*f_ds) suggests that the inclusion of two out of three socio-demographics (travel importance and age) with high motivation, perceived risks and destination selection is able to influence the decision-making element of travel intentions. This solution appears to have the highest coverage (0.46382) and consistency (0.88435) of all pre-referendum sufficient configurations. The second solution (~ f_tri* ~ f_a*f_ai*f_m*f_pi*f_qi*f_pr* ~ f_ds) indicates that the inclusion of annual income with high motivation, price and quality issues, and perceived risks can lead to high membership scores for travel intentions. This configuration appears to have the lowest coverage (0.42954). The last pre-referendum solution (~ f_tri*f_a* ~ f_ai* ~ f_m* ~ f_pi*f_qi*f_pr* ~ f_ds) proposes that the inclusion of age with high quality issues and perceived risks can produce high scores (coverage: 0.43093; consistency: 0.81547) for travel intentions.

In terms of the research study conducted after the Brexit referendum, the first sufficient configuration (~ f_tri*f_a* ~ f_ai* ~ f_m* ~ f_pi*f_qi*f_pr* ~ f_ds) includes age with high quality issues and perceived risks, and is actually the third presented solution in the pre-referendum research. This is now the configuration with the highest coverage (0.45931) and consistency (0.87938). The second configuration (the same as the second pre-referendum solution) (~ f_tri* ~ f_a*f_ai*f_m*f_pi*f_qi*f_pr* ~ f_ds) suggests that the inclusion of annual household income with high motivation, price and quality issues, and perceived risks can determine the intention to travel. Finally, the third solution (f_tri* ~ f_a*f_ai* ~ f_m*f_pi* ~ f_qi*f_pr*f_ds) indicates that the inclusion of travel importance and annual household income with high price issues, perceived risks and destination selection can produce high membership scores. This configuration appears to have the lowest

Table 3
Descriptive statistics.

Statements	Pre-referendum				Post-Referendum			
	Means	Std. Deviation	Kurtosis	Skewness	Means	Std. Deviation	Kurtosis	Skewness
M1	3.83	.664	1.306	-.815	3.86	.660	1.041	-.626
M2	3.80	.760	.463	-.682	3.81	.746	.550	.679
M3	4.10	.716	.231	-.522	4.12	.702	.392	-.542
M4	4.08	.832	-.074	-.674	4.10	.825	.021	-.688
M5	3.98	.857	-.580	-.426	3.99	.850	.544	.435
M6	3.72	.983	-.859	-.357	3.72	.887	.834	-.298
PI1	3.83	.697	.316	-.404	3.87	.680	.681	-.523
PI2	3.95	.752	-.441	-.239	3.98	.721	-.437	-.401
PI3	3.97	.863	-.837	-.318	3.99	.719	-.640	-.344
PI4	3.99	.808	-.637	-.324	4.02	.772	-.410	-.363
PI5	3.99	.812	-.488	-.393	4.01	.776	-.217	-.438
PI6	4.00	.873	− 1.005	-.291	4.02	.835	-.808	-.334
PI7	4.18	.823	-.848	-.520	4.17	.814	-.742	-.529
QI1	4.07	.592	.212	-.115	4.05	.620	.602	-.305
QI2	4.20	.637	-.290	-.269	4.17	.670	.087	-.423
QI3	3.98	.664	-.127	-.177	3.95	.883	.068	-.279
QI4	3.99	.642	-.320	-.069	3.97	.644	-.325	-.459
QI5	3.75	.719	-.471	.050	3.73	.518	-.429	-.339
PR1	3.93	.657	.627	-.417	3.92	.567	.387	-.354
PR2	4.00	.684	.074	-.313	3.99	.695	.012	-.315
PR3	3.96	.706	.050	-.333	3.94	.711	-.097	-.276
PR4	3.96	.687	.291	-.379	3.95	.691	.147	-.326
PR5	3.96	.751	-.526	-.210	3.95	.754	-.643	-.172
DS1	4.21	.644	.317	-.447	4.20	.543	.433	-.455
DS2	4.18	.721	-.441	-.441	4.18	.822	-.386	-.753
DS3	4.26	.736	-.203	-.659	4.27	.632	-.116	-.693
DS4	3.42	.752	.008	-.337	3.40	.538	.445	-.305
DS5	4.11	.730	-.413	-.382	4.10	.753	.361	-.388
TI1	3.98	.723	1.068	-.659	4.01	.631	.840	-.527
TI2	3.95	.782	-.687	-.197	3.98	.598	.590	-.645
TI3	4.10	.734	.348	-.603	4.02	.888	-.725	-.230

coverage (0.42034) and consistency (0.83930) of all three post-refer-endum solutions.

8. Discussion

The findings of each research study (pre/post), as well as the comparison between them, generate an interesting discussion. Before the referendum, the solution with the highest consistency and coverage dealt with gained experience, since the aspects of motivation, destination selection and perceived risks played a significant role. Moreover, the influence of travel significance and the variation of perspectives towards age were included in the model. Consumer travel and destination experience, as well as the generated satisfaction, are considered to be crucial factors in the formulation of travel intentions. These aspects are in agreement with previous studies, such as those by Wu (2016), and Unger, Uriely, and Fuchs (2016). The second sufficient

configuration focuses on price and quality aspects. The price-quality nexus is very important in travel decision-making since tourists focus on finding high-quality products in order to achieve the best possible value-for-money (Papatheodorou & Pappas, 2017). Therefore, increased transportation costs and product prices are likely to reduce traveler numbers, especially during periods of instability (Wang, 2009). The third sufficient configuration deals with the uncertainty generated in a travel and tourism product. Even if before the referendum this solution generated the lowest consistency, it still had an important impact on travel decision. As the literature indicates, the formulation of fear and uncertainty in travelers in accordance with the perceived risks is strongly connected with the age of the respondents (Williams & Balaz, 2015). Therefore, travel and destination risks influence the quality expectations of a tourist product and have a strong impact upon travel intentions (Quintal et al., 2010).

After the Brexit decision, the configuration expressing uncertainty

Table 4
Complex solutions on travel intentions.

Complex Solution	Raw Coverage	Unique Coverage	Consistency
Model: f_ti = f(f_tri,f_a,f_ai,f_m,f_pi,f_qi,f_pr,f_ds)			
Pre-referendum			
f_tri*f_a* ~ f_ai*f_m* ~ f_pi* ~ f_qi*f_pr*f_ds	0.46382	0.12092	0.88435
~ f_tri* ~ f_a*f_ai*f_m*f_pi*f_qi*f_pr* ~ f_ds	0.42954	0.13029	0.84381
~ f_tri*f_a* ~ f_ai* ~ f_m* ~ f_pi*f_qi*f_pr* ~ f_ds	0.43093	0.11934	0.81547
Solution Coverage: 0.44021 Solution Consistency: 0.84672			
Post-referendum			
~ f_tri*f_a* ~ f_ai* ~ f_m* ~ f_pi*f_qi*f_pr* ~ f_ds	0.45931	0.13857	0.87938
~ f_tri* ~ f_a*f_ai*f_m*f_pi*f_qi*f_pr* ~ f_ds	0.43029	0.11743	0.85934
f_tri* ~ f_a*f_ai* ~ f_m*f_pi* ~ f_qi*f_pr*f_ds	0.42034	0.11382	0.83930
Solution Coverage: 0.43757 Solution Consistency: 0.85373			

Table 5
Cronbach A and factor analysis.

	Statements	Pre-Referendum		Post-Referendum	
		Cronbach A	Loadings	Cronbach A	Loadings
	Motivation	.732		.732	
M1	I travel abroad in an effort to meet different people		.784		.644
M2	I travel abroad for rest and relaxation		–		-.751
M3	I get away from the daily routine by traveling abroad		.878		.688
M4	I travel abroad in order to discover new places and/or things		.804		.596
M5	I increase my knowledge by traveling abroad		–		.799
M6	I travel abroad in order to do business		.572		.733
	Price Issues	.725		.746	
PI1	The higher the price of the product, the better its quality		.612		.762
PI2	I buy as many of my tourist products as possible at sale prices		.782		.771
PI3	The price is the main criterion for my purchasing decision		.955		.673
PI4	I look carefully to find the best value-for-money		.931		.650
PI5	I usually choose lower priced tourist products		.889		.623
PI6	I think about the risk of not having made a good purchase bearing in mind the price I pay		.889		.617
PI7	The tourist product/package I purchase should be reasonably priced		.782		.548
	Quality Issues	.711		.738	
QI1	When choosing overseas tourist products I consider the potential quality of the travel I intend to do		.965		.961
QI2	When choosing overseas tourist products I consider the potential risk of not meeting my quality expectations		.868		.776
QI3	I compare the quality of other relevant overseas tourist products with the one I intend to purchase		.877		.781
QI4	My standards and expectations are very high with regard to the overseas tourist product I intend to buy		.898		.776
QI5	Generally, I try to buy the best quality in overseas tourism products		.622		.701
	Perceived Risks	.740		.735	
PR1	When purchasing an overseas tourist products I consider the possibility that I may lose out financially		-.923		-.773
PR2	When purchasing an overseas tourist product I consider the possibility that I may not meet my expectations		.828		-.739
PR3	When purchasing an overseas tourist product I consider the possibility that I may lose something		-.950		-.615
PR4	When purchasing an overseas tourist product I consider the possibility that I may be disappointed		-.938		-.799
PR5	When purchasing an overseas tourist product I consider the possibility that I may not be as convenient as anticipated		.891		-.617
	Destination Selection	.717		.749	
DS1	I select an overseas destination in terms of its health and hygiene conditions		.815		.657
DS2	I select an overseas destination considering the shopping opportunities it provides		.962		.788
DS3	The amount of information I have about an overseas destination influences my selection decision		.863		.749
DS4	The local transportation is important to me when selecting an overseas destination		–		–
DS5	The accommodation provided in an overseas destination affects my selection decision		.927		.755
	Travel Intention	.725		.741	
TI1	It is likely that I will continue to visit non-U.K. destinations		.881		.753
TI2	I intend to travel abroad in the next 12 months		.878		.782
TI3	If I want to travel for tourism purposes, I will first think of traveling abroad		.934		.797

became the one with the highest coverage and consistency. This outcome supports the findings of the study by Arentze and Timmermans (2009) indicating that Brexit (as a specific event) has influenced the travel choices of Londoners, and most likely the British. This was due to the generation of political and economic liquidity in the country (McConnell et al., n.d.), triggering changes in the decision-making attributes of the respondents and transforming their travel intentions (Albayrak & Caber, 2013). Price and quality issues continue to play an important role in travelers' decisions since they continue to produce the configuration with the second highest consistency. The fall in the value of sterling has inevitably increased the cost of outbound tourism (Collinson & Jones, 2016), leading respondents to continue to seek out value-for-money, but with even higher requirements than before the referendum. The price aspect was dominant with the third sufficient configuration in the post-referendum period. This solution is affected by travel importance and annual household income, and is actually focused on destination costs. Its involvement with perceived risks, price issues, and destination selection highlights the importance of value-for-money, this time with regard to the selected destination. This is because most outbound British tourists are visiting European (mostly EU Mediterranean) destinations (Eurostat, 2017), and the Brexit decision has substantially increased the cost.

Overall, the post-referendum findings indicate that uncertainty is the main solution, followed by two price-oriented sufficient

configurations. Even if uncertainty and the price-quality nexus were also present before the referendum, their importance has been increased in the post-referendum period. As expected, the Brexit decision has increased cost considerations, also generating a second cost oriented configuration to replace the previously dominant one which focused on experience. Moreover, the importance of uncertainty in outbound travel has increased. These conditions create a new environment for the outbound traveling intentions of Londoners, and likely for people residing in the UK.

8.1. Confirmation of tenets

The findings indicate that the solution coverage (pre-referendum: 0.44021; post-referendum: 0.43757) in both research studies is high (Table 3). Moreover, all the examined socio-demographics and simple conditions appear at least once in every study. This leads to the confirmation of the first tenet (T1): The same attribute is likely to determine a different decision for travel intention depending on its interaction/configuration with other attributes.

In both studies the generated sufficient configurations include at least one socio-demographic and two attributes. More specifically, in the pre-referendum research the first solution includes two socio-demographics (trip importance; age) and the motivation, perceived risks and destination selection attributes. The second configuration consists

of the annual income socio-demographic and the attributes motivation, price and quality issues, and perceived risks. The third solution embeds the socio-demographic of age and the simple conditions of quality issues and perceived risks. The post-referendum study includes two of the three solutions that already existed before the Brexit decision (uncertainty; price-quality), and one configuration (destination costs) that did not exist in the former research. This latter solution includes two socio-demographic elements (travel importance; annual income) and three attributes (price issues; perceived risks; destination selection). These findings are consistent with those of previous studies, including Woodside (2014) and Olya and Altinay (2016), and confirm the second tenet (T2): Recipe principle: When a complex configuration is created by two or more simple conditions, an outcome condition can have a consistently high score.

According to Ordanini et al. (2014) the solutions generated by fsQCA concern (i) an outcome dealing with the combination of the related variables, and (ii) the variable groups' association within the combination. This is because fsQCA is based on cases instead of variables. As previously indicated, two out of three solutions appeared in both research studies (uncertainty; price-quality), while one other appears in each of the studies (pre-referendum: experience; post-referendum: destination costs). These findings confirm the third tenet (T3): Complex interactions/configurations may influence the decision-making of travel intentions.

In both research studies (before and after the Brexit decision), the study implemented contrarian case analysis (inclusion/exclusion of attributes). Thus, the presence or absence of a simple condition is able to determine its positive or negative effect on travel intention. This creates sufficient grounds for the confirmation of the fourth tenet (T4): Within different combinations the simple conditions of interactions/configurations can positively or negatively affect the travel intention decision-making.

According to Woodside (2014) the equifinality principle indicates that multiple paths may lead to the same outcome. In Table 3, the illustrated outcome scores are not actually high, and in each research study three sufficient configurations were able to lead to the same outcome. Therefore, the fifth tenet is confirmed (T5): Equifinality principle: A sufficient travel intention is not always the result of a high outcome score.

Finally, in the first research study (pre-referendum) the coverage of solutions varies from 0.43093 to 0.46382, while in the second one (post-referendum) this variation is between 0.42034 and 0.45931. Following Olya and Altinay (2016), these findings suggest that none of the three solutions in each study applies in all cases, therefore it confirms the sixth tenet (T6): When the Y scores are high, a given recipe for the travel intention decision-making is not relevant for all cases.

8.2. Fit and predictive validity

The most usual implementation of model examination deals with model fit (Gigerenzer & Brighton, 2009), and aims to ensure that the data are able to create the basis for the relationships among the observed variables and the factors (Pappas, 2015). Therefore, just a few studies employ predictive validity (Papatheodorou & Pappas, 2017), indicating that model sufficiency is not necessarily dependent on the observations of a relevant good fit (Gigerenzer & Brighton, 2009). This study progresses from fit to predictive validity, following the process described by Olya and Altinay (2016) and Wu et al. (2014). For each research study (pre- and post-referendum) the sample was divided into two equal parts, a holdout and a modeling subsample, in order to test the theory that the patterns of travel intention decision-making are consistent indicators for the generation of high scores. The modeling subsample was used for the examination of the configured models with regard to the holdout sample. The algorithm of the holdout sample was similar to the fsQCA results for the whole sample. Then, through the use of the modeling subsample the holdout sample was examined. For the

pre-referendum research, the overall consistency was 0.811 (C1 > 0.74) and the coverage was 0.447 (0.75 > C2 > 0.25). For the post-referendum research, the overall consistency was 0.782 and the coverage was 0.402. The findings suggest that both pre- and post-referendum models have good predictive validity.

8.3. fsQCA versus linear analysis

Since most studies in travel and tourism employ correlational analysis (Pappas & Papatheodorou, 2017), the research has progressed to the comparison of the findings highlited previously with Structural Equation Modeling (SEM and Cramer's V, in order to assess fsQCA's methodological value. However, any potential comparison of fsQCA with other methods should be made with caution, since the implementation of alternative assumptions such as complex causality deals with different objectives, the established relations are made through cases and not through variables, and the sufficient configurations are identified under the perspective of the provision of necessary and adequate conditions for the result of interest (Ordanini et al., 2014).

When all the items under evaluation are adopted from previous researches, and are based on previous analytic research and theory, Confirmatory Factor Analysis (CFA) should be employed (Preedy & Watson, 2009). The structural model fit was determined after the examination of the complete structural model, and the identification of causal relationships generated from the examined constructs. For the data support of the examined relationships among the examined factors and the respective variables, there was a need for the evaluation of the individual factors. As Martens (2005) suggests, the χ^2 statistical probability is the most usual measure of SEM fit. In a good fitting model, χ^2 should be non-significant (Hallak, Brown, & Lindsay, 2012). In both researches the sample was big (N = 307 [pre-referendum]; N = 278 [post-referendum]). Following Chen and Tsai (2007), in such cases it is better to divide χ^2 ratio with the degrees of freedom (χ^2/df), since this can provide a better estimate of goodness-of-fit. As Schermelleh-Engel, Moosbrugger, and Müller (2003) suggest, we consider a good fit when χ^2/df is somewhere in between 0 and 2 ($0 \leq \chi^2/df \leq 2$). Moreover, some other fit indices need to be considered. Kline (2010) recommends that among a plethora of fit indices the three most appropriate (apart from χ^2) that need to be considered for model fit are:

- The Comparative Fit Index (CFI). It determines no relationships among the examined variables, suggesting a better fit when it is closer to 1.0 (Weston & Gore, 2006).
- The Root Mean Square Error of Approximation (RMSEA). When we use χ^2 statistics it provides a mechanism in order to adjust the sample size, and considers a model of close fit when its value is 0.05 or less (Browne & Cudeck, 1993).
- The Standardised Root-Mean-Square Residual (SRMR). It is the square root of discrepancy between the model covariance matrix and the sample covariance matrix, and has to be less than 0.08 (Hu & Bentler, 1999).

In terms of the pre-referendum research, the model fit is as follows: $\chi^2 = 351.842$, df = 191, χ^2/df = 1.842; CFI = 0.911; RMSEA = 0.046; SRMR = 0.074. The findings from the post-referendum research were as follows: $\chi^2 = 304.683$, df = 167, χ^2/df = 1.824; CFI = 0.902; RMSEA = 0.048; SRMR = 0.077.

The research examined the important components by using factor analysis. For higher coefficients, when the absolute values were less than 0.4 they were suppressed, According to Norman and Streiner (2008) this is considered as the minimum acceptable value. For the examination of internal consistency (the potential for several items to evaluate the same general construct producing similar scores), the study also employed Cronbach's Alpha, generating an overall reliability of 0.726 (pre-referendum) and 0.739 (post-referendum). According to
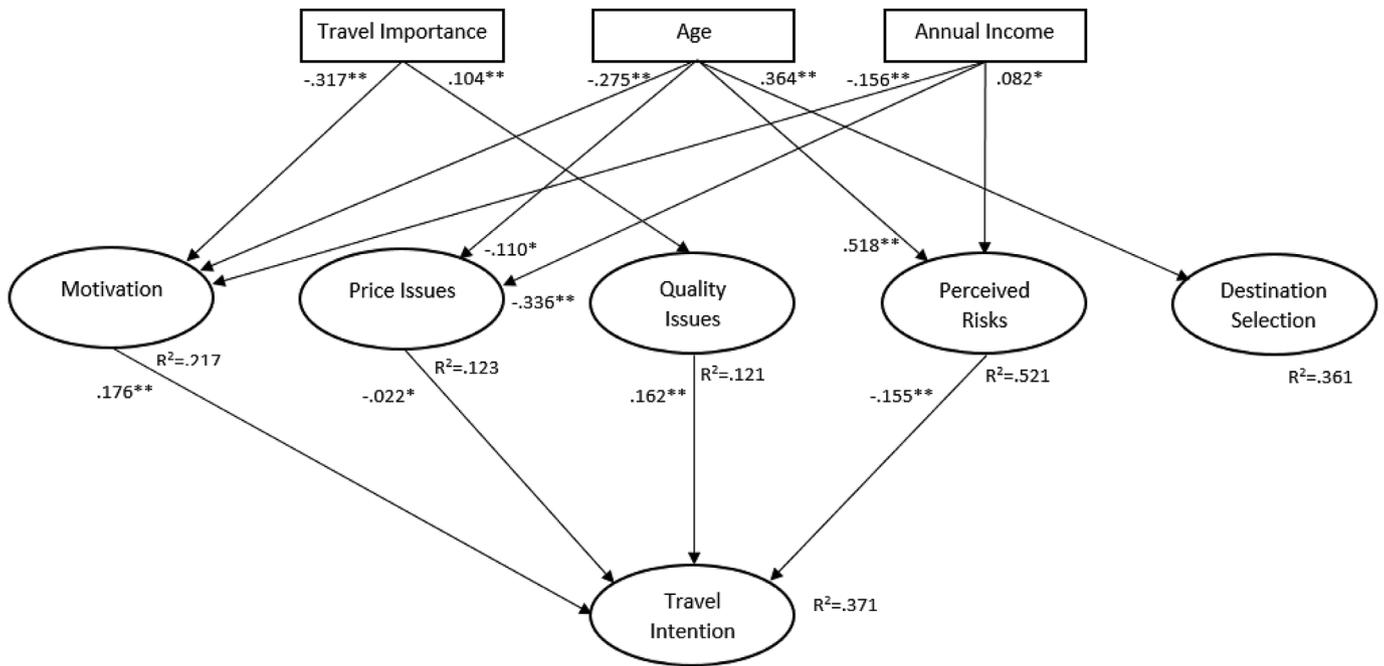
Fig. 1. Pre-referendum travel intentions.

the findings, in both studies all variables scored over 0.7, which is the minimum acceptable value (Nunnally, 1978). The full statements used in the research along with Cronbach A and factor loadings are presented in Table 5.

The endogenous variables of the studies are explained by the research model (Figs. 1 and 2), while the overall R^2 values in pre and post-referendum periods were .371 and .382 respectively. As presented in Figs. 1 and 2, the results confirmed most parametric relationships. In terms of the grouping variables' influence (age; travel importance; annual income) on the study constructs, the intentions for overseas traveling of the respondents appear to be significantly affected.

The appropriateness of fsQCA compared with SEM is apparent when dealing with complexity aspects. To begin with, SEM limits itself to a

single pathway (joint linear direct effect of all the socio-demographics and constructs under examination). On the other hand, fsQCA has produced three different sufficient configurations in each research study. This reveals the inability of regression to express the full range of different influences and combinations capable of leading to the same outcome. Furthermore, in regression analysis each of the socio-demographic characteristics influences at least two constructs, highlighting the dependency of travel decision-making in all three of them. This is evidenced in both (pre- and post-referendum) research studies. Conversely, in fsQCA there is no sufficient configuration that includes all three socio-demographics. This provides evidence that it is not necessary for travel decision-making to always take into consideration all socio-demographics. Finally, in each linear outcome one construct (pre-
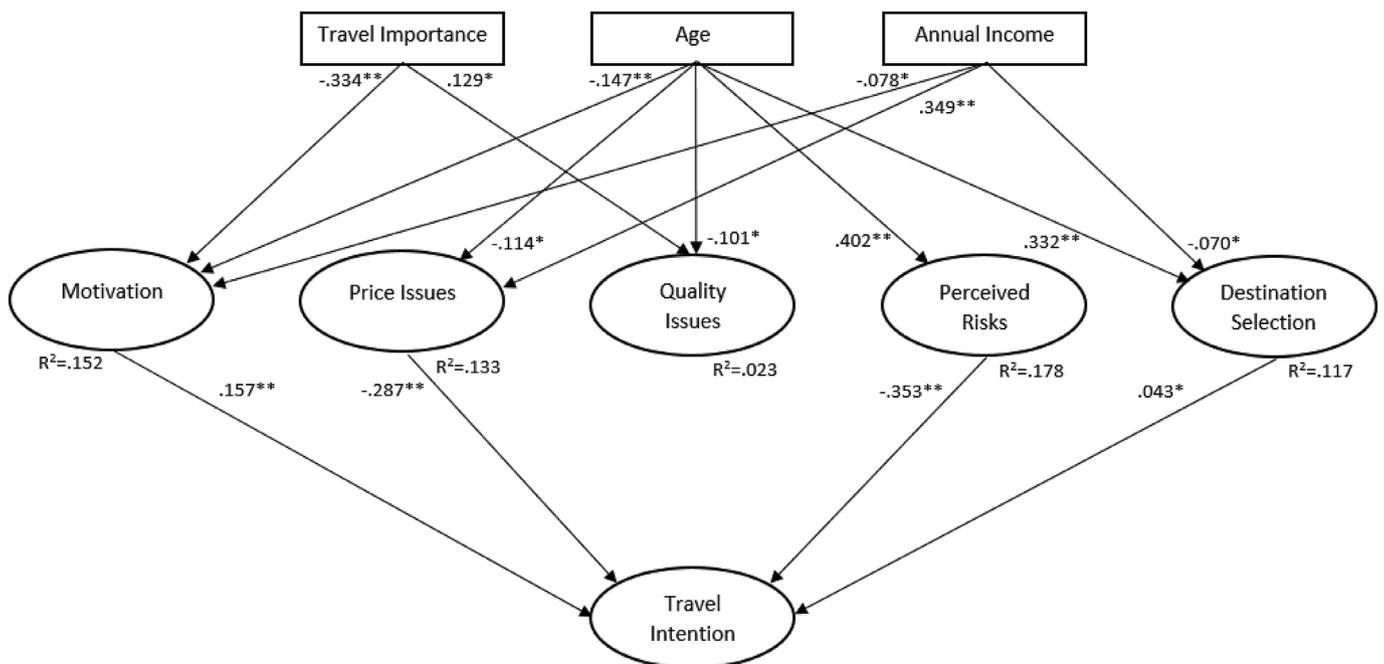

Fig. 2. Post-referendum travel intentions.

Table 6
Cramer's V tests.

	χ^2	Cramer's V	Sig.
Pre-referendum			
Travel Intention*Motivation	103.364	.206	.286
Travel Intention*Price Issues	133.599	.234	.722
Travel Intention*Quality Issues	74.696	.175	.843
Travel Intention*Perceived Risks	104.544	.207	.009
Travel Intention*Destination Selection	77.481	.178	.293
Post-referendum			
Travel Intention*Motivation	120.000	.234	.680
Travel Intention*Price Issues	123.137	.236	.778
Travel Intention*Quality Issues	74.531	.184	.846
Travel Intention*Perceived Risks	99.524	.212	.382
Travel Intention*Destination Selection	78.835	.189	.042

referendum: destination selection; post-referendum: quality issues) seemed to have no influence on travel intentions, while the nonparametric analysis revealed that all constructs appear in at least one generated solution per research study.

In addition to regression, Cramer's V was also implemented (Table 6). The variation of Cramer's V is from 0 (no association) to 1 (complete association) (Burns & Burns, 2008). The findings suggest that a statistical significance existed only once per research study (pre-referendum: perceived risks [V = 0.207; Sig. = 0.009]; post-referendum: destination selection [V = 0.189; Sig. = 0.042]), while the effect size varied from moderate (0.20 < V < 0.25) to weak (0.15 < V < 0.20). Therefore, fsQCA seems to be more efficient than Cramer's V for the evaluation of travel intention, since it better illustrates the influence of the examined constructs.

9. Managerial implications

The heart of traveling overseas from UK is in London, since the city includes four out of five of the busiest airports in the country (CAA, 2016). Therefore, the findings should be of special interest to the travel industry in UK, and to those interested in UK outbound tourism, which is one of the most significant tourist flows in Europe (Eurostat, 2017). Therefore, the examination of complex consumer behavior concerning Brexit is important for the travel and tourism industry of both the UK and the EU. As the results indicate, fsQCA is the most appropriate method for the examination of the complex decision-making surrounding travel intention. The solutions generated by the analysis focus on different market segments. During the pre-referendum period, these segments were characterized by: (i) experience; (ii) price-quality; and (iii) uncertainty. The Brexit decision has altered this market segmentation by excluding experience and including destination costs, while it has strengthened the importance of uncertainty. The understanding of these attributes, is likely to significantly affect the decision-making process in travel and tourism enterprises concerning the selection of appropriate market segment(s) and the determination of travel and destination supply-side products and services.

Complexity evaluation using fsQCA could also affect the managerial aspects of the travel and tourism industry, since it can provide grounds for better comprehension of consumer behavior in terms of travel and destination selection, as well as the impact of specific events and their effects on the reorientation of consumer travel preferences. As the findings highlight, the conventional correlational analyses cannot encapsulate the extent of consumer decision-making, since they only provide a single pathway. Managers need to consider multiple pathways for the formulation of travel decision-making (McCabe, Li, & Zengxiang, 2016), and its variation over time, especially when affected by specific events. During the current period of turmoil where numerous events (e.g. recession, the refugee crisis, Brexit, terrorism) are

likely to affect travel and tourism decisions (Karl, n.d.) and increase the complexity of purchasing intentions, fsQCA can be used as an effective tool for managers, providing a holistic perspective on consumer behavior. Through the provision of higher value-for-money products and services, the minimization of actual and perceived risks, and the strengthening of destination image, travel and tourism enterprises can increase consumer motivation and sustain (if not increase) their market share. This could possibly be achieved through the creation of targeted tourist packages (taking into consideration the characteristics of each market segment as expressed through the generated sufficient configurations), and the reduction of uncertainty with a parallel strengthening of destination image through the provision of targeted information and marketing campaigns. Moreover, tourism and hospitality enterprises could structure their campaigns (discounts, cost stabilization of products and services, introduction of new products etc.) to create further awareness through the exploitation of opportunities to address price sensitive market segments.

The better comprehension of complexity issues can also assist companies to develop new products and services, with special reference to discretionary products like travel and tourism (Papatheodorou & Pappas, 2017). When dealing with service sector products the decision-making complexity is higher (Ordanini et al., 2014). Thus, fsQCA is considered to be the most appropriate method for adaptation, since it seems to have the ability to better inform managers about market demand and its special characteristics, as well as to differentiate between preferences and factors affecting purchasing behavior. For example, the uncertainty among UK residents is likely to change (even increase) over time, especially during the very complex Brexit negotiations that are likely to last for much longer than two years (Niblett, 2016), and the adaptation of the UK to the new reality, that might take decades (BBC, 2017). As a result, managers can improve their strategic orientation towards consumer targeting, better estimate the timing for launching their promotional campaigns, and create market awareness for their existing and new products and services. Therefore, fsQCA could become a useful tool for travel, tourism and hospitality managers as well as for destination authorities, as a means of improving their decision-making.

10. Conclusion

The study has used fsQCA for the examination of decision-making complexity with regard to the Brexit referendum's impact on the travel intentions of Londoners. More specifically, it included two mirror research studies, the first one held the month before the referendum and the other the month after the Brexit decision was taken. The research studies examined the implications of the referendum results with regard to motivational impacts, price issues, quality issues, destination selection, and perceived risks. Up until now, only a handful of researches have employed fsQCA in the service sector (Ordanini et al., 2014; Papatheodorou & Pappas, 2017), and (to the best of the author's knowledge) this is the first time that fsQCA has been used in the travel and tourism domain for impact evaluation during the pre- and post-stages of an event. The research also compared fsQCA with two dominant linear analysis methods (regression and Cramer's V), highlighting the appropriateness of fsQCA for the examination of complex attributes through the analysis of cases instead of variables. The study also progressed from fit to predictive validity, something that, so far, just a few studies have implemented (Pappas, 2017; Wu et al., 2014).

Despite the study's contribution, several limitations need to be highlighted. First, the lack of fsQCA studies in travel and tourism hinders the evaluation of the full potential of this method. Therefore, further examination of fsQCA versus other classical tools such as Test on Contingency Tables, Principal Component Analysis, and Conjoint Analysis, is necessary to be employed. In addition, this is the first tourism study to have used fsQCA for evaluation before and after a specific event. As it is apparent, this limitation actually derives from the study's methodological contribution itself. It is therefore suggested that

there is a need for more research which uses fsQCA to examine the complexity of travel and tourism. The second limitation deals with the examined socio-demographics and attributes, since different ones may produce different outcomes generating other sufficient configurations. Thus, if repeated with other factors, the study should be executed with caution. Third, an examination of holidaymakers residing in different countries (or even different regions of the UK) or affected by different events (e.g. terrorism; the refugee crisis) may generate different outcomes. Therefore, the findings are considered to be significantly context-dependent and in each case they should be carefully interpreted. Fourth, the use of time-tried resources of statistics and economic theory for the examination of the actual effects of Brexit decision (i.e.: fall of Sterling with the consequent increase in retail prices) is advised, since the complexity of consumer responses to prices is never direct or simple. Finally, due to the expected protracted nature of the Brexit negotiations, if this research is repeated in the future the results may differ, since numerous factors (e.g. the progression of negotiations, the degree of uncertainty, the foreseeable impact of Brexit on the UK economy) are likely to change, directly influencing the travel decision-making of the respondents.

Brexit has not yet happened, and is not going to happen at least till the 29th March 2019. All the forecasts and perceptions deal with the dynamics of the uncertainty this development might trigger. A systematic evaluation concerning the fluctuations of uncertainty could be very important for both consumers and travel and tourism industry. In the methodological domain, fsQCA appears to have the ability to sufficiently identify and present specific solutions, while it can also be used in parallel with other techniques such as conjoint analysis. In addition, fsQCA could be used for the evaluation of other factors that affect the impact of specific events on travel intention decision-making. All of the above, provide grounds for further use of fsQCA in the travel and tourism domain.

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