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22 **1. Introduction**

23 The interdependence of immigration and tourism has arguably received little attention
24 in the academic literature (Seetaram, 2012), while research on the impact of refugee
25 flows on tourism is almost non-existent. Genç (2012) argues that an increase of
26 immigrants from a specific country may lead to a greater rise (in percentage terms) of
27 tourism arrivals from that country. As immigration continues to affect many
28 communities, the traditional classification of travel purposes into recreation, business,
29 and visiting friends and relatives (VFR) becomes gradually antiquated; tourism
30 experiences are now often much richer than in the past and tourists end up having
31 significant socio-economic exchanges with local communities (Griffin, 2016).
32 Nonetheless, the tourism – immigration nexus may prove more complex depending
33 among others on the host society's structures and the emerging trade patterns between
34 the host and the immigrant-source country (Balli, Balli, & Louis, 2016).

35

36 Reasons behind migration include hopeless economic and political situations; hunger;
37 genocide; and ethnic and religious persecution in the originating countries (Toffle,
38 2015). Most studies, however, do not distinguish between refugee and non-refugee
39 immigrants (Ghosh & Enami, 2015), even if there are notable differences between the
40 two. First, the flow of refugees is typically a concerted movement of individuals en
41 masse escaping persecution in their home country; on the other hand, economic
42 immigrants are individuals moving sequentially to seek better economic security and
43 employability conditions (Cortes, 2004). Second, the dominant flow of refugees
44 originates from poor economies; this may not necessarily be the case with immigrants
45 (Stark, 2004).

46 From a mobility perspective, the complexity of modern societies is neither anarchic
47 nor perfectly ordered (Capra, 2002). Disasters such as wars and natural catastrophes
48 may trigger a systemic change and produce high population mobility (Sheller & Urry,
49 2006); this may subsequently result into a parallel exchange and transfer of cultures
50 and images (Linke, 2012; Urry, 2002). Contemporary societal systems are so tightly
51 coupled that any logistical efforts to separate groups such as immigrants and refugees
52 may break down in the face of unpredictable formations (Sheller & Urry, 2006).
53 Moreover, tourism and immigration may intertwine, as tourists transform themselves
54 into migrants when seeking employment in a destination country: this situation may
55 ultimately create a tourism-immigration continuum (Illes & Michalko, 2008).

56

57 This paper examines the underlying complexity in the tourism-refugeeism nexus
58 using the 2015-16 refugee crisis in Greece as a case study. Based on the results of a
59 nationwide survey of Greek tourism accommodation managers/owners the paper
60 studies the implications of the refugee crisis for the perception of Greece as a tourist
61 destination and the subsequent reaction of inbound tourists; the way refugees are
62 regarded from a security and cultural aspect; the interaction between refugees and
63 host communities; and the actions undertaken by the surveyed tourism
64 accommodation providers to address the refugee challenge. From a theoretical point
65 of view, the paper contributes to the literature by providing a better understanding of
66 the complex tourism-refugeeism relationship and its implications for decision-making
67 in tourism accommodation. Moreover, from a methodological perspective, the
68 research implements fuzzy set Qualitative Comparative Analysis (fsQCA), which is
69 regarded as an innovative tool in tourism studies and the service sector more
70 generally. On these grounds, the paper also sets as one of its primary objectives to

71 reveal the suitability of asymmetric (i.e. nonlinear) research on tourism against the
72 dominant regression analysis and Structural Equation Modelling (SEM)
73 implementation. It also progresses from fit to predictive validity for the proposed
74 models.

75

76 **2. Chaos and complexity**

77 Change and instability are considered as inherent characteristics of systems, being on
78 the edge of chaos when a trigger event may directly or indirectly induce a crisis
79 (Speakman & Sharpley, 2012). The theory of chaos was introduced in 1963
80 (Lawrence, Feng, & Huang, 2003) and proved useful in complex system analysis
81 (Mahmoudabadi, 2015). According to Seeger (2002, p.329) the chaos perspective
82 “proposes a broad set of loosely related theoretical and meta-theoretical orientations
83 to the behaviour of complex non-linear systems”. The theory suggests that even small
84 behavioural differences can produce substantial diverging outcomes to dynamic
85 systems making it impossible to predict long term patterns (Kellert, 1993). The theory
86 of complexity has evolved from chaos theory focusing on research with complex
87 characteristics, and “deals with systems that have many interacting agents and
88 although hard to predict, these systems have structure and permit improvement”
89 (Zahra & Ryan, 2007, p.855). Management-wise, when a crisis occurs, complexity in
90 the business environment increases (Coskun & Ozceylan 2011); thus, the theory of
91 complexity may also be linked to emergency management (Morakabati, Page, &
92 Fletcher, 2016; Ramalingam 2013). Moreover, when the degree of complexity
93 increases the prediction of the systemic behavioural patterns is less amenable
94 (Fitzerland & Eijnatten, 2002).

95

96 Both theories (i.e. chaos and complexity) are based on asymmetric (i.e. nonlinear)
97 systems being sensitive to initial conditions (Hock, 1999); their difference is that there
98 can be no forecast in chaos theory, whilst in complexity theory this unpredictable
99 behaviour may be framed into a quasi-stable pattern (Olmedo & Mateos, 2015). In
100 chaos theory, simple systems produce complicated non-predictable patterns of
101 behaviour, whilst complexity theory emphasises the way multi-elemental systems lead
102 to relative behavioural predictability (Baggio, 2008). As Fitzgerald and Eijnatten
103 (2002) indicate, the theory of complexity focuses on: (i) the simple behaviours that
104 complex systems produce; (ii) the higher-level patterns that simple interactions may
105 generate; and (iii) the identification of recognisable patterns when a holistic
106 examination is undertaken in the complicated system. Even if the complexity of
107 chaotic situations may lead to unpredictable and dramatic conditions, the emerging
108 dynamic systems are not fully uncontrolled, whilst the existence of relative order is
109 still present (Nilson, 1995; Zahra & Ryan, 2007). Thus, in service industries research,
110 complexity theory is used to provide an adequate evaluation and explanation of the
111 behavioural attributes, and the process of decision-making by implementing
112 alternative asymmetric (i.e. nonlinear) combinations of indicators (Wu, Yeh, Huan, &
113 Woodside, 2014).

114

115 While chaos and complexity theories have been successfully applied in the context of
116 generic management studies (Hwang & Yuan, 2014), their discussion in tourism
117 remains limited. In fact, tourism research has not adequately focused on chaos and
118 complexity since it had followed until now a predominantly reductionist approach
119 (McDonald, 2009). The behavioural patterns of travellers and the enterprising
120 decision-making depend on several factors creating complexity patterns on their

121 formulation (Pappas, 2016b). The tourism accommodation sector is characterised by
122 countless interacting entities and activities critically vulnerable to crises produced by
123 irregular political, climatic, and market events (Baggio, 2008; Cole, 2009;
124 Papatheodorou, 2006). This leads to an inherent nonlinearity of the emerging
125 relationships, which prevents the effective coupling of causes and consequences
126 (Olmedo & Mateos, 2015); thus, decision-making is substantially affected by both
127 exogenous and endogenous system shocks (Boukas & Ziakas, 2014). With special
128 reference to tourism accommodation firms, Edgar and Nisbet (1996) suggest that
129 these are spatially fragmented and disaggregated, whilst they operate in dynamic and
130 complex environments. Even so, all tourism related factors possess some emerging
131 features due to a partial order existence in their operations (Olmedo & Mateos, 2015).
132 This observation led Faulkner and Russell (1997) almost two decades ago, to propose
133 chaos and complexity as alternative though highly relevant frameworks for the
134 examination of tourism accommodation attributes, since the comprehension of the
135 existing dynamic systems was problematic, due to the assumption that the
136 relationships are stable and static. Thus, the extent of behavioural complexity makes
137 the Newtonian (linear) thinking inadequate and indicates a need for asymmetric
138 (nonlinear) analysis (Laws & Prideaux, 2005). In tourism accommodation operations
139 and management, the application of complexity theory can provide significant
140 information in terms of the formulation and expression of behavioural patterns
141 (Russell & Fulkner, 2004), helping to better understand the evolving dynamics of the
142 tourist system (Faulkner & Russell, 2000).

143

144 In fact, complexity theory may provide important insights from a strategic risk
145 management perspective and hence influence the decisions made by accommodation

146 providers when tourism dynamics are significantly perturbed by extraordinary and
147 possibly unforeseen phenomena, such as ‘black swan’ events (Koo, Halpern,
148 Papatheodorou, Graham & Arvanitis, 2016; Taleb, 2007). Large forced migration and
149 refugee flows may have such an effect on tourism due to their impact on the involved
150 stakeholders. Previous research indicates that the effect of such migration and refugee
151 flows on the behavioural patterns of local community is largely determined by the
152 temporal nature of the flows, i.e. whether these are transient or result in permanent
153 new settlements; the level of human capital skills, health condition and cultural
154 proximity (e.g. language, religion) between refugee/migrants and their hosts; the
155 possible downward pressure on wages exerted by refugee/migrants in case the latter
156 are allowed to actively enter the local labour market; and the possible upward pressure
157 on the prices of both non-tradable (e.g. land, services) and tradable goods exerted by
158 the increased levels of demand from refugees and migrants (Alix-Garcia & Saah,
159 2010; Baez, 2011; Friedberg & Hunt, 1995). Akgündüz, van den Berg and Hassink
160 (2015) investigate the impact of the Syrian refugee crisis on the Turkish labour market
161 and find a modest upward increase in prices but only very limited crowding-out effect
162 of natives in local labour markets; in such a case, any discontent from local
163 communities is expected to be within control from a policy point of view.
164 Nonetheless, the same study suggests that the refugee camps in question are located
165 away from the major Turkish resorts along the Aegean Sea and the Mediterranean
166 Coast and are thus expected to have only a limited impact on the tourism dynamics
167 there (admittedly, inbound tourism in Turkey seems to have greatly suffered since
168 2015 but mainly for reasons beyond the scope of this paper). On the other hand, when
169 the refugee points of entry and/or related camps are located in tourist areas, the
170 dynamics may be very different: in spite of any initial expression of humanitarianism,

171 the local community may eventually become irritated and aggressive, fearing the loss
172 of tourism jobs and income as a result of negative world media publicity (Okaka,
173 2014) or at best ‘compassion fatigue’ of remote audiences (Höijer, 2004);
174 international mass tour operators may seize the opportunity to ask for additional, last
175 minute discounts from local hoteliers (Papatheodorou & Arvanitis, 2014); whilst
176 tourists in the context of their wider appropriating ‘gaze’ (Sarup, 1996; Urry, 2002)
177 may become apathetic or exhibit a risk-averse behaviour characterised by ‘a conscious
178 operation of ideological power’ (Jackson, 2005) fleeing away from the destination in
179 question. Volunteers and Non-Governmental Organisations (NGOs) may play a vital
180 role in addressing safety and security issues of the most vulnerable groups, e.g.
181 children and elderly people among the refugees (Chtouris & Miller, 2017);
182 nonetheless, this is expected to have only a limited impact on the involved tourism
183 stakeholders. Not surprisingly, many of the above concerns on the emerging tourism
184 dynamics and their impact on the decision-making process of tourism accommodation
185 providers are applicable in the context of the recent refugee crisis in Greece as
186 discussed in the next section.

187

188 **3. Refugee crisis in Greece**

189 Since the early 1990s a substantial number of people (mainly from the Balkan
190 countries) have emigrated to Greece in search for a better future. Political regime
191 change in Albania, Bulgaria and Romania and the collapse of Yugoslavia led to
192 massive immigrant flows that proved difficult to manage and control as Greece lacked
193 a suitable legislative framework at the time (Triandafyllidou, 2009). Until 1991 the
194 Greek immigration policy was based on regulations created in the 1920s, which made
195 it incredibly difficult for labour migrants to enter the country (Kiprianos, Baliias, &

196 Passas, 2003). This resulted in massive deportations of immigrants in the 1990s
197 (Triandafyllidou, 2009). Being a largely homogeneous in terms of ethnicity and
198 religion country, this sudden influx of migrants in Greece was initially perceived
199 negatively by many of its inhabitants partly because of the dubious profile of certain
200 immigrants, e.g. convicts from Albania further to the opening-up of that country's
201 prisons after the regime change (Papadopoulos, Karasavvoglou, Geranis, & Violitzi,
202 2015); hence, many local communities expressed symptoms of intolerance and
203 xenophobia (Levinson, 2005). Still, such reactions started receding in the beginning
204 of 2000s (Hatziprokopiou, 2004); even if immigrant communities are not yet fully
205 integrated into the Greek society (Baldwin-Edwards, 2005), they conveniently coexist
206 with the locals (Kokosalakis & Fokas, 2007). In fact, during the first decade of the
207 21st century immigration lowered production costs and boosted consumption and
208 investment to the benefit of the Greek economy in aggregate, i.e. leaving inequality
209 issues aside (Chassamboulli & Palivos, 2013).

210

211 Entering a prolonged recession in 2008, the current economic crisis was first overtly
212 unfolded in Greece in November 2009, whilst the push for contractionary fiscal policy
213 has since become as a long-lasting phenomenon (Polito & Wickens, 2012). Since
214 2010 combined immigration and refugee inflows from Turkey have boomed,
215 especially due to the Arab Spring and the subsequent Syrian Refugee crisis, resulting
216 into the deepening of the economic crisis, and leading the Greek economy to the brink
217 of collapse. The most recent study of the United Nations High Commissioner for
218 Refugees (UNHCR, 2016) reports that Greece hosted 18,489 refugees and 11,750
219 people in refugee-like situations, i.e. a total of 30,239 refugees in 2015 (p. 58), but
220 these numbers refer to “persons granted a complementary form of protection and

221 those granted temporary protection” and “for whom refugee status has, for practical or
222 other reasons, not been ascertained” (p.61), meaning that they do not include the
223 overall number of refugees hosted in Greece, but just a small part of them.

224 Nonetheless, according to the same report, 856,700 refugees (p. 33) entered Greece in
225 2015 mainly through the islands located in the Eastern Aegean Sea, transforming the
226 eleven million inhabitants’ country as the main gateway for refugees fleeing into
227 Europe, from war and conflict zones such as Syria, Afghanistan and Iraq and crossing
228 from Turkey by boat (European Commission, 2015). In the beginning of the refugee
229 crisis Greece was considered a transit country, and the economic cost of the refugee
230 crisis was estimated at 0.3 percent of GDP, or an annual cost of over \$675 million;
231 this includes money spent for land and sea border surveillance to deter the arrival of
232 refugees and asylum seekers (Allon, 2004; Hayes & Vermeulen, 2012; Osterbo,
233 2015). Nonetheless and since the March 2016 decision to close the Balkan route to
234 curb immigration and refugee flows, many of these people have now been trapped in
235 Greece: thus, the cost of accommodating their needs has risen very substantially
236 (Tomkiw, 2016). Halicioglou and Yolac (2015) reveal that the Greek economic crisis
237 and the refugee flows have also resulted in an increase in unemployment rates and a
238 decrease of human capital and entrepreneurial talent in the country causing a further
239 rise in unemployment.

240

241 Several initiatives have been undertaken by the European Union and Greece to
242 drastically reduce the refugee flows to the Greek islands of the Eastern Aegean Sea,
243 but refugees continue to arrive by boat and subsequently detained in camps, where
244 Greek police struggles to keep control (Banks, 2016). Nonetheless, the refugee crisis
245 has not only affected Greek islands, but also the mainland. With over 55,000 refugees

246 trapped all over Greece (Kodr, 2016; UNHCR, 2016), the humanitarian crisis in
247 Athens (Greece's capital) rapidly escalated since until summer 2016 about 5,000 men,
248 women and children trapped in Piraeus (i.e. Athens' port) were entirely dependent on
249 volunteers in the absence of any visible government support, whilst aid agencies have
250 warned that the "appalling" conditions for thousands of stranded refugees are
251 becoming increasingly explosive (Smith, 2016b). The northern part of the country has
252 been crowded by refugees, whilst only in the camp of Idomeni close to the border of
253 Greece with the Former Yugoslav Republic of Macedonia (FYROM) the refugee
254 camp exceeded 12,000 people at some stage (PressTV, 2016). Western Greece has
255 also experienced major waves of refugees seeking a way out to Europe after the
256 closure of borders between Greece and FYROM due to the refugee crisis
257 (Zafiroopoulos, 2016).

258

259 Having the above in mind, it may be argued that the refugee crisis in Greece has
260 resulted in complex situations and raised challenges at different levels including
261 tourism. In fact, the refugee crisis has reshaped the behavioural patterns for much of
262 the Greek society. With Greece's impoverished state structure stretched to breaking
263 point due to recession, refugees have been dependent on the kindness of Greek
264 people, where Greeks of all backgrounds and ages have rushed to join the relief effort
265 (Smith, 2016a); this reaction is expected to substantially boost Greece's reputation for
266 offering warm tourism accommodation, and ultimately increase tourist flows (Amin,
267 2016). On the other hand, inbound tourist arrivals in 2016 are expected to be
268 considerably fewer on several Eastern Aegean Sea islands (e.g. Lesbos, Chios)
269 because of image breaking especially among sunlust tourists, whilst in other parts of
270 the country tourism officials anticipate a significant increase of visitors

271 (Angelopoulou & Roeder, 2016). In any case, the Greek government tries to reduce
272 the negative impacts of the refugee crisis by relocating thousands of immigrants from
273 popular tourist gateways (e.g. the port of Piraeus) to other less renown areas; still, the
274 inability of the country to successfully handle a situation few have envisaged is
275 apparent (Smith, 2016c). This leaves a great burden for handling the tourism impacts
276 of the current refugee crisis to the Greek tourism service providers and mainly the
277 accommodation enterprises which are required to effectively manage this complexity
278 as now discussed in the empirical research section of this paper.

279

280

281 **4. Methods**

282 *4.1. Research characteristics*

283 The research was conducted between December 2015 and February 2016 via e-mail
284 questionnaires sent to Greek tourism accommodation firms. There were two reasons
285 for the selection of this period: (a) it was during the low tourist season when most
286 Greek tourism accommodation enterprises organise their operational aspects for the
287 next tourist period, and (b) this was the peak of the refugee crisis where not only
288 Greece but also other EU member states were in the brink of experiencing a collapse
289 of the Schengen agreement. All the above create an uncertain and complex political,
290 financial, and business environment, where crisis management implementation is
291 vital.

292

293 Due to the expected low response rate, more than 7,000 e-mails were sent with
294 research questionnaires addressed to owners / managers of tourism accommodation
295 firms in Greece. The e-mail addresses were sourced from the Greek Travel Pages

296 (www.gtp.gr). In total 811 usable answered questionnaires were collected. Table 1
297 classifies these companies per their official tourism accommodation star rating system
298 in Greece (1* for the lowest and 5* for the highest quality establishment) and compares
299 the respective shares with those prevailing at an aggregate level in the country; as
300 distributions are not substantially different, it may be validly argued that the selected
301 sample is representative of the population.

302

303 Please insert **Table 1**

304

305 *4.2. Measures*

306 The questionnaire consists of 29 Likert Scale (1 strongly agree / 5 strongly disagree)
307 statements structured around six constructs. The constructs related to the impact of
308 the refugee crisis on destination perceptions (six statements) as well as criminality
309 issues (four statements) and cultural aspects of refugees (four statements) are inspired
310 by Moufakkir (2014). The four statements focusing on the perceived involvement of
311 host communities are based on Luken and Tranmer (2010). Five statements are used
312 to examine expected tourist behaviour based on Breitsohl and Garrod (2016). Finally,
313 the research selected the study of Ocumus and Karamustafa, (2005) suitably
314 modifying the relevant six statements to examine the operational decisions taken to
315 face the refugee crisis. The full statements along with descriptive statistics are
316 presented in Table 2. The reliability and validity of this selection rationale is
317 supported by studies such as Moufakkir (2008), and Breitsohl and Garrod (2016).
318 Moreover, one question was included to ensure that the respondents were
319 owners/managers of the respective tourism accommodation firms.

320

Please insert **Table 2**

321

322 To encapsulate the essence of complexity, the study uses fuzzy-set Qualitative
323 Comparative Analysis (fsQCA). This method examines the relationships expected to
324 shape the outcome of interest and any potential binary set of combinations generated
325 from its predictors (Longest and Vaisey, 2008). fsQCA is a mixed-method technique
326 combining quantitative empirical testing (Longest and Vaisey, 2008) and qualitative
327 inductive reasoning made by the implementation of case analysis (Ragin, 2000).
328 fsQCA handles logical complexity acknowledging that different results can be
329 produced by alternative combinations of characteristics when appropriately combined
330 with other events or conditions (Kent & Argouslidis, 2005). The study also estimates
331 negated sets, i.e. absence or presence of a given condition (Woodside and Zhang,
332 2013). The membership score in a negated set is calculated by taking one minus the
333 membership score of the examined case in the original fuzzy set (Skarmeas,
334 Leonidou, & Saridakis, 2014).

335

336 Ordanini, Parasuraman and Rubera (2014) suggest that in set theory, consistency of a
337 sub-relation with fuzzy measures emerges when the membership scores in a specific
338 attributional causal set are equal or systematically less than the membership scores in
339 the outcome set. Thus, consistency is calculated as follows:

340

341
$$Consistency(X_i \leq Y_i) = \frac{\sum_i [\min(X_i; Y_i)]}{\sum_i (X_i)}$$

342

343 where, for tourism accommodation owner/manager i , X_i is the membership score in
344 the X configuration and Y_i is the membership score in the outcome condition.

345 Accordingly, coverage includes the assessment of sufficient configurations' empirical
346 importance (Ordanini et al., 2014) and is calculated as follows:

347

$$348 \text{ Coverage}(X_i \leq Y_i) = \sum_i [\min(X_i; Y_i)] / \sum_i (Y_i)$$

349

350 Woodside (2014, p. 2499) suggests that the asymmetric consistency metric is
351 analogous to the symmetric correlation metric; similarly, the asymmetric coverage
352 metric is analogous to the symmetric coefficient of determination. A solution is
353 considered informative and acceptable when the model(s) solution coverage is
354 between .25 and .75 and the solution consistency is above .74 (Skarmeas et al., 2014).
355 Moreover, the membership score of a complex antecedent condition (known as causal
356 recipe) is defined as the minimum of the membership scores of the intersecting
357 selected simple causal conditions of fuzzy-sets that include the recipe in question
358 (Woodside and Zhang, 2013; Skarmeas et al., 2014).

359

360 Using an aggregation (i.e. grouping) process of the 29 statements around the six
361 constructs, Table 3 reports the correlation results among the latter. Skarmeas et al.
362 (2014) argue that when all the coefficients in the correlation matrix are less than .60 in
363 absolute value, then a general asymmetry exists in the respective relationships among
364 variables. This is the case indeed here, meaning that the causal conditions produced
365 by the alternative combinations may lead to the same outcome condition (Woodside,
366 2013). Using fsQCA this study, therefore, examines how tourism accommodation
367 providers' operational decisions to face the refugee crisis (related to the sixth
368 construct) are made based on the complex antecedent conditions (i.e. causal recipes)
369 that lead to high membership scores in the other five constructs. Based on

370 asymmetric analysis, the research gives special reference to the description of
371 combined complexities and the identification of nonlinear relationships.

372

373 Please insert **Table 3**

374 **5. Empirical results**

375 As discussed earlier, the study refers to the perceptions of 811 Greek tourism
376 accommodation managers/owners. Moreover, its calibration is implemented by a
377 group of 64 randomly selected individual cases. To evaluate the operational decisions
378 to face the refugee crisis (f_{od}) the calibrated fuzzy sets used were named as “ f_{dp} ”
379 for destination image perception; “ f_{ci} ” for criminality issues; “ f_{ca} ” for cultural
380 aspects; “ f_{hc} ” for perceived host communities involvement; and “ f_{ta} ” for expected
381 tourist actions.

382

383 *5.1. Sufficient complex statements*

384 The analysis presented in Table 4 produced three sufficient complex statements,
385 where the absence (i.e. negation – low inclusion level) of an attribute is depicted by
386 the symbol ‘ \sim ’. Overall, the solution consistency is good (0.845) also providing a
387 high coverage (0.438), which indicates an informative and acceptable solution in
388 relation to Skarmas’s et al. (2014) suggestions.

389

390 Please insert **Table 4**

391

392 The first solution ($\sim f_{dp} * f_{ci} * f_{ca} * \sim f_{hc} * \sim f_{ta}$) suggests that low inclusion levels of
393 destination image perceptions, involvement of host communities and expected tourist
394 actions coupled with high inclusion levels of importance for criminality issues and

395 cultural aspects of refugees may induce tourism accommodation industry providers to
396 take operational decisions to face the refugee crisis. The consistency level of this
397 solution is 0.875 and its coverage equal to 0.452 – both metrics are higher compared
398 to the other two solutions. In fact, the first sufficient configuration may be
399 characterised as ‘refugee-centric’. This is because, the Greek tourism accommodation
400 industry providers shape their operational action plans based predominantly on
401 criminality issues and cultural aspects of refugees. They emphasise social pathology
402 phenomena (e.g. creation of unsafe street atmosphere, lack of law obedience) that may
403 result or become exacerbated by the refugee crisis. This is also related to the sheer
404 volume of refugees and their different cultural and behavioural background compared
405 to the highly ethnic and religious homogeneity of Greeks as suggested by
406 Papadopoulos et al. (2015).

407

408 The second solution ($f_{dp} \sim f_{ci} \sim f_{ca} \sim f_{hc} \sim f_{ta}$) suggests that low criminality
409 issues and cultural aspects of refugees, coupled with high destination image
410 perceptions, host communities’ involvement and expected tourist actions lead to high
411 membership scores for operational decisions by tourism accommodation service
412 providers. The consistency and coverage of the second sufficient configuration are
413 .843 and .386 respectively. In fact, this second solution highlights factors not directly
414 related with the refugees per se; Greek tourism accommodation service providers thus
415 focus their decision-making process on how the locals-visitors nexus affects the
416 formation of destination image perceptions and actions. The influential role of locals
417 and tourists on destination image is also discussed in previous studies such as Huang,
418 Li and Kai (2010).

419

420 The third solution (~f_dp*f_ci*f_ca*f_hc*~f_ta) producing high membership in
421 operational decisions to face the refugee crisis suggests dependence on high
422 criminality issues, cultural aspects of refugees and host communities' involvement
423 coupled with low destination image perceptions and tourist expected actions. In
424 contrast to the previous two sufficient configurations, this one generates the lowest
425 consistency (0.821), whilst its coverage is 0.417. The third solution adds the aspect of
426 host communities' involvement to the first sufficient configuration. Therefore,
427 tourism accommodation firms appear to seriously consider the impact of local
428 assistance to refugees (Smith, 2016a). In fact, this assistance may substantially boost
429 the reputation of Greece as a welcoming tourism destination to the benefit of inbound
430 tourism flows (Amin, 2016). Thus, in addition to criminality and cultural aspects of
431 refugees, the owners/managers of tourism accommodation establishments need to
432 appreciate the locals' involvement in the refugee crisis and its subsequent positive
433 repercussions for tourism arrivals.

434

435 *5.2. fsQCA versus regression*

436 As Pappas (2016b) indicates, the great majority of hospitality and tourism
437 accommodation studies evaluate statistical relationships using a Newtonian (i.e.
438 linear) perspective by predominantly implementing regression analysis and structural
439 equation modelling. For this reason, the paper now compares the research findings of
440 the previous section with regression analysis based on Structural Equation Modelling
441 (SEM) to assess the methodological added value of fsQCA. Still, any comparative
442 attempts should be cautiously treated since fsQCA makes alternative assumptions
443 such as complex causality; focuses on different research objectives; establishes
444 relations not through variables but through cases; and identifies configurations that

445 provide sufficient and necessary conditions for a result of interest (Ordanini et al.,
446 2014).

447

448 Concerning the measurement of validity and reliability, the SEM findings indicate
449 that the Kaiser-Meyer-Olkin (KMO) statistic of Sampling Adequacy was 0.805
450 ($p < .01$), which is higher than the minimum requested 0.6 for further analysis. The
451 overall reliability measured through Cronbach alpha was .638. Although, Kline
452 (2000) and DeVellis (2012) argue that the value of Cronbach alpha should ideally
453 exceed 0.7, the same studies suggest that a Cronbach alpha value lying between 0.6
454 and 0.7 is sufficiently high to justify further analysis. In fact, the latter should be
455 clearly discontinued only when the alpha value is below 0.5, which is obviously not
456 the case here. The same view is also shared by Nunnally (1978). *Average Variance*
457 *Extracted (AVE)* was also examined. For convergent validity, the acceptance criterion
458 is that AVE should exceed .5 (Bagozzi & Yi, 1988; Kim, 2014; Lee, Jan, & Yang,
459 2013). In fact, AVE was higher than .5 for all examined constructs, indicating that the
460 study has an adequate level of convergent validity. AVE and the factor analysis
461 loadings are presented in Table 5.

462

463 Please insert **Table 5**

464

465 Discriminant validity was also employed and calculated as follows (Pappas, 2016a):

$$\frac{r_{xy}}{\sqrt{r_{xx} \times r_{yy}}}$$

466

467 where r_{xy} expresses the correlation between x and y; r_{xx} indicates the reliability of x;

468 and r_{yy} illustrates the reliability of y. The correlation results for Destination

469 Perceptions (DP), Criminality Issues (CI), Cultural Aspects (CA), Host Communities
470 (HC), Tourism Attractions (TA) and Operational Decisions (OD) are presented in
471 Table 6. Since in all cases the discriminant validity is below .85 the examined
472 constructs do not overlap, i.e. they measure different things (Voorhees, Brady,
473 Calantone, & Ramirez, 2016).

474

475

Please insert **Table 6**

476

477 The model fit is as follows: $\chi^2=685.276$, $df=406$, $\chi^2/df=1.688$ [acceptable value
478 $0 \leq \chi^2/df \leq 2$; Schermelleh-Engel, Moosbrugger and Müller (2003)], Comparative Fit
479 Index CFI= .904 [acceptable value is when CFI is close to 1.0; Weston and Gore
480 (2006)], Root Mean Square Error of Approximation RMSEA= .47 [acceptable value
481 is when $RMSEA < .5$; Browne and Cudeck (1993)], and Standardised Root-Mean-
482 Square Residual SRMR= .72 [acceptable value is when $SRMR < .8$; Hu and Bentler
483 (1999)]. All effects are statistically significant, whilst the overall model's $R^2=.396$.
484 Moreover, all five constructs (i.e. destination perceptions; criminality issues; cultural
485 aspects; host communities' involvement; tourist actions) appear to directly affect
486 operational decisions (i.e. the sixth construct) to face refugee crisis, confirming the
487 structural model as it schematically appears in Figure 1.

488

489 As the SEM results indicate, regression limits itself to the consideration of a single
490 pathway, i.e. the joint linear direct effect of all five constructs on operational
491 decisions. Thus, it cannot fully encapsulate the extent of alternative influences and
492 combinations leading to the same outcome, which is an inherent feature of complexity
493 in the decision-making process. For example, the first fsQCA sufficient configuration

494 (~f_dp*f_ci*f_ca*~f_hc*~f_ta) while inducing tourism accommodation service
495 providers to take operational decisions to face the refugee crisis, it does not involve
496 destination image perceptions, involvement of host communities and expected tourist
497 actions as required by SEM. Moreover, in two out of three fsQCA configurations, the
498 raw coverage is higher (in the second configuration raw coverage is almost the same)
499 than the overall R^2 of the regression model and all sufficient configurations are
500 characterised with high consistency. The comparison of findings reveals the suitability
501 of fsQCA vis-à-vis regression analysis, since the latter proves more restrictive than
502 fsQCA and can only partially explain the evolving relationships among the examined
503 constructs.

504 Please insert **Figure 1**

505

506 *5.3. Fit and predictive validity*

507 Much of the research dealing with modelling evaluation focuses on model fit
508 (Gigerenzer & Brighton, 2009) to ensure that the data can explain the relationships
509 amongst the observed variables and their respective factors (Pappas, 2015). In fact,
510 only a limited number of studies concentrate on predictive validity (Papatheodorou &
511 Pappas, 2016; Wu et al., 2014), since a good model is not necessarily dependent on a
512 relevant good fit to observations (Gigerenzer & Brighton, 2009). This research also
513 estimates the derived models' predictive validity. To test the latter, the process
514 described by Wu et al. (2014) is followed, i.e. the research sample is divided in a
515 holdout and a modelling subsample, since the patterns of tourism accommodation
516 providers' decisions are perceived as consistent indicators to produce high scores,
517 using half of the overall sample. The overall consistency is .817 ($C1 > .74$) and the

518 coverage.504 (.75>C2>.25). Thus, the findings indicate a good predictive validity for
519 the suggested model.

520

521 **6. Discussion**

522 The results of the study highlight the importance of fsQCA when examining complex
523 situations, which influence the operational decisions of the tourism accommodation
524 sector. Three different attribute configurations of the Greek tourism accommodation
525 managers/owners were identified when dealing with the refugee crisis, namely: (i) the
526 refugee-centric orientation; (ii) the visitors-locals nexus; and (iii) the locals'
527 behavioural impact on tourism.

528

529 Unlike fsQCA, conventional linear analysis lacks a holistic perspective and hence is
530 unable to illustrate the essence of these complex associations. The findings highlight
531 the dual role of host communities for the development of tourist image and the
532 formation of the operational decisions to overcome a crisis. Tourism accommodation
533 managers/owners should consider the behavioural patterns of host communities and
534 align their operational actions in a pro-refugee perspective instead of perceiving the
535 refugee crisis as a threat to their business survival and profitability. For example, they
536 should use the refugee crisis as an opportunity to instigate and promote a culture of
537 hospitality based on diversity, tolerance and compassion avoiding at the same time,
538 however, any dubious and degrading practices introduced by 'human zoos' in the
539 past. Tourism accommodation providers also need to focus on the quality aspects
540 concerning the perceptions of destination image and the influence exerted by tourist
541 attributes. This does not only relate to safety and security, cleanness, expensiveness
542 and cultural aspects of the destination (as also included in the construct of destination

543 perceptions), but also embeds the quality of products and services as well as the
544 provided tourist experience especially in periods characterised by combined crises
545 (i.e. economic recession; migration and peripheral war conflicts). As Pappas (2016a)
546 also indicates, good quality products and services are likely to contribute into the
547 reduction of uncertainty and increase the positive perceptions of a worthwhile
548 purchase and trust on the provider. Morakabati et al. (2016) also stress the criticality
549 of constructive communication and clear allocation of responsibilities between the
550 public and the private sector. This is because of the continuously increasing role of
551 social media and the subsequent need for prompt and effective responses by all
552 organisations involved in emergency situations.

553

554 fsQCA can also help decision-makers in tourism accommodation enterprises improve
555 their crisis management strategies and operational decisions by enabling them to
556 better understand market transformation, changing tourist perceptions and preferences
557 as well as the dynamics behind destination image building. For example, the
558 behavioural patterns of locals vis-à-vis immigrants and refugees may differ from one
559 period to another, especially in countries like Greece with complex historical
560 backgrounds: on the one hand, locals perceive immigrants as a threat to the existing
561 and desired high levels of ethnic and religious homogeneity in the country; on the
562 other hand, historical memories concerning ethnic and religious persecution and
563 cleansing (e.g.: the Armenian (1915) and Pontic (1914-1922) genocides) and the
564 refugee conditions that Greeks repeatedly faced in the past (e.g. the 1922 Asia Minor
565 Catastrophe; the 1945-1949 Greek civil war) have motivated locals to provide a warm
566 welcome to refugees arriving in Eastern Aegean Sea islands (Amin, 2016), as well as
567 the >50,000 refugees trapped across the country (Kodr, 2016). With special reference

568 to the service sector where decision-making complexity is higher (Ordanini et al.,
569 2014), the models provided by the current study indicate that operational decisions of
570 tourism accommodation companies are dependent on the specific characteristics of
571 the business environment. Thus, fsQCA may prove a useful tool for tourism
572 accommodation managers/owners to reach better informed decisions and confront
573 crisis conditions more successfully.

574

575 **7. Conclusions**

576 This paper used fsQCA to examine complexity in the tourism accommodation
577 providers' decision-making process to face the current refugee crisis in Greece. The
578 implementation of fsQCA in the tourism sector is innovative and just a handful of
579 studies have generally employed it in the service sector (see Pappas, 2016b; Wu et al.,
580 2014). This study also compares fsQCA with the dominant linear analysis (structural
581 equational modelling regression) used in tourism research, highlighting the efficiency
582 of the former when examining complex attributes, since it focuses on cases instead of
583 variables. In fact, fsQCA can identify, evaluate and present sufficient complex
584 solutions concerning a specific aspect, and provide different pathways leading to the
585 same outcome. On the other hand, and drawing parallelisms with the single versus
586 multiple equilibria discussion in economics (Arthur, 1999), it is evident that fsQCA
587 does not produce a unique and 'neat' solution as often sought by managers in tourism
588 to eliminate the transaction (search) costs of exploring alternative courses of action.
589 Nonetheless, the lack of a proposed panacea is not considered as a problem because
590 the alternative configurations suggested by fsQCA endow managers and policymakers
591 with the flexibility to contextualise and choose the pathway that appears best given
592 the circumstances in situ. The refugee crisis in tourism is a dynamic process

593 characterised not by non-linearity - not static determinism; hence, the use of fsQCA
594 may prove a suitable method. Moreover, the present study demonstrates predictive
595 validity, something that very few service-oriented studies have done so far
596 (Papatheodorou & Pappas, 2016; Wu et al., 2014), thus stressing the potential
597 superiority of the estimated models.

598

599 Despite the study's contribution to both methodology and literature, limitations
600 should also be acknowledged. Due to the very recent implementation of fsQCA in
601 tourism research, the first limitation stems from the study's methodological
602 contribution itself, i.e. its potential may not have been fully realised and aspects
603 concerning dataset calibration and analysis may compromise the quality of results
604 (Cooper & Glaesser, 2011). This is because, fsQCA scores synthesise a substantial
605 amount of qualitative information, using a process that does not fully consider the
606 richness of qualitative data; therefore, fsQCA needs to be re-grounded on the original
607 evidence (Baptist & Befani, 2015) and assessed through its implementation in
608 multiple tourism contexts involving complexity. Another issue derives from the
609 examination of different attributes, since different outcomes are likely to be produced.
610 Thus, implementation of research findings should be made with caution especially
611 when other influential factors of tourism accommodation are to be evaluated. Third, a
612 similar analysis that would focus explicitly on tourism accommodation
613 managers/owners and local communities in the Eastern Aegean Sea islands that bear
614 the main burden of the refugee crisis in Greece could produce different outcomes; in
615 line with the above, perceptions of tourists about the refugee crisis are also critically
616 important in a customer-centric business environment and may differ from those
617 views expressed by managers. Still, operational decision-making in tourism

618 accommodation is not actioned by tourists, but by hospitality managers/owners.
619 Thus, what matters in the scope of the present study is not the formation of destination
620 image per se (in the eyes of tourists) or the behaviour of the local community or other
621 stakeholders vis-à-vis the refugee crisis; the emphasis instead is on operational actions
622 taken by accommodation providers based on their own perceptions and partly in
623 relation to the crisis effect on destination image. In the literature, operational actions
624 and their strategic connotations are examined under the perspectives of decision-
625 makers and not of tourists; this is the reason why related studies such as Tzschentke
626 Kirka and Lynch (2008) and Elbana (2016) use accommodation providers for their
627 primary data analysis. In the same spirit, the present research may validly shed light
628 on the formation of behavioural patterns during periods of turmoil and many of the
629 acknowledged limitations may set the fundamentals for future research in the field.

630

631 Having the above in mind, fsQCA should be primarily interpreted as a complementary
632 analytical tool, especially when combined with other comparative or case-based
633 approaches (Lee, 2008) including conjoint analysis. Furthermore, fsQCA may include
634 the examination of other influential factors on crisis events, such as political
635 instability, social unrest, recession, etc. Finally, fsQCA can further highlight the effect
636 of combined crises (e.g. refugee crisis with recession); the role of crisis factors that
637 reorient international tourist flows (e.g. the Arab spring); as well as the importance of
638 exogenous (e.g. political instability) versus endogenous (e.g.: job vulnerability)
639 turmoil factors. In conclusion, fsQCA can flourish and further develop as a method to
640 examine complexity in tourism with direct implications for managers and
641 policymakers.

642

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951 Table 1: Research Participants and Tourism Accommodation Establishments in Greece

Category	Research Participants		Accommodation Establishments (2013) ¹	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
5 Star	44	5.4	361	3.7
4 Star	116	14.3	1277	13.2
3 Star	225	27.7	2358	24.4
2 Star	304	37.5	4203	43.4
1 Star	122	15	1478	15.3
<i>Total</i>	<i>811</i>	<i>100</i>	<i>9677</i>	<i>100</i>

952 ¹Source: AGTE (2016)

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954 Table 2: Descriptive Statistics

	Statements	Mean	SD*
<i>Destination Image Perceptions</i>			
DP1	The refugee crisis has affected the perception of Greece as a safe tourism destination	2.48	.642
DP2	The refugee crisis has affected the perception of Greece as a clean tourism destination	3.74	.676
DP3	The refugee crisis has affected the perceptions of Greece as a friendly tourism destination	3.87	.733
DP4	The refugee crisis has affected the perception of Greece as a cultural tourism destination	4.11	.646
DP5	The refugee crisis has affected the perception of Greece as a colourful tourism destination	4.07	.712
DP6	The refugee crisis has affected the perception of Greece as an expensive tourism destination	4.02	.665
<i>Criminality Issues regarding Refugees</i>			
CI1	Refugees living in Greece are criminals	4.01	.588
CI2	Refugees living in Greece create unsafe street atmosphere	2.50	.677
CI3	Refugees living in Greece are extremists	4.01	.641
CI4	Refugees living in Greece do not respect Greek Law	2.21	.763
<i>Cultural Aspects regarding Refugees</i>			
CA1	Refugees living in Greece create problems due to their lifestyle	2.29	.674
CA2	Refugees living in Greece are very attached to their traditions	2.44	.737
CA3	Refugees living in Greece are very attached to their religion	2.61	.831
CA4	Refugees living in Greece are too many	2.33	.797
<i>Host Communities' Involvement</i>			
HC1	Host communities provide jobs to refugees	2.59	.650
HC2	Host communities provide accommodation to refugees	2.49	.702
HC3	Host communities provide information to refugees	2.46	.718
HC4	Host communities provide subsistence materials (e.g.: food, clothing, etc.) to refugees	2.44	.683
<i>Tourist Actions</i>			
TA1	Tourists visiting Greece may complain about the destination to others	2.78	.646
TA2	Tourists visiting Greece may say negative things about the destination to others	2.70	.694
TA3	Tourists visiting Greece may recommend others not to book flights to the destination	2.85	.667
TA4	Tourists visiting Greece will accept the refugee crisis, since nothing can be done	3.04	.798
TA5	Tourists visiting Greece will consider returning to the destination for a holiday	2.92	.817
<i>Operational Decisions</i>			
OD1	The refugee crisis led the company to revise its credit policy	3.45	.783
OD2	The refugee crisis led the company to revise its debt structure	3.25	.915
OD3	The refugee crisis led the company to reduce costs	3.34	.843
OD4	The refugee crisis led the company to increase marketing efforts	3.50	.921
OD5	The refugee crisis led the company to reduce its staff	3.53	.848
OD6	The refugee crisis led the company to postpone new investments	3.44	.917

956 Table 3: Correlation Matrix

957

	1	2	3	4	5	6
1 Destination Perceptions	1					
2 Criminality Issues	.120**	1				
3 Cultural Aspects	.016	.034	1			
4 Host Communities	.092**	.134**	-.090*	1		
5 Tourist Attributes	-.142**	.045	.000	-.072*	1	
6 Operational Actions	-.267**	-.167**	.062	-.258**	.145**	1

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*Correlation is significant at .05 level

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**Correlation is significant at .02 level

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962 Table 4: Complex Solutions on Operational Decisions

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Complex Solution	Raw Coverage	Unique Coverage	Consistency
Model: $f_{od}=f(f_{dp},f_{ci},f_{ca},f_{hc},f_{ta})$			
$\sim f_{dp}*f_{ci}*f_{ca}*\sim f_{hc}*\sim f_{ta}$	0.452	0.126	0.875
$f_{dp}*\sim f_{ci}*\sim f_{ca}*f_{hc}*f_{ta}$	0.386	0.103	0.843
$\sim f_{dp}*f_{ci}*f_{ca}*f_{hc}*\sim f_{ta}$	0.417	0.118	0.821
Solution Coverage: 0.438		Solution Consistency: 0.845	

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965 Table 5: AVE and Loadings Produced by Factor Analysis

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	AVE	Destination Perceptions	Criminality Issues	Cultural Aspects	Host Communities	Tourist Actions	Operational Decisions
DP1	.52	.444					
DP2		.477					
DP3		.502					
CI1	.54		.943				
CI2			.466				
CI3			.937				
CA1	.51			.841			
CA2				.953			
CA3				.829			
CA4				.884			
HC1	.56				.939		
HC2					.873		
HC3					.860		
HC4					.836		
TA1	.57					.871	
TA2						.818	
TA3						.902	
TA4						.844	
TA5						.777	
OD1	.55						.957
OD2							.813
OD3							.766
OD4							.865
OD5							.883
OD6							.895

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Note: Construct statements with values less than .4 are not presented due to low commonality

971 Table 6: Correlations and Discriminant Validity

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Individual Correlations		Inter-Item Correlations		Discriminant Validity
DP-DP	.42	OD-DP	.32	.74
CI-CI	.49	OD-CI	.36	.77
CA-CA	.50	OD-CA	.31	.66
HC-HC	.48	OD-HC	.37	.80
TA-TA	.45	OD-TA	.35	.79
OD-OD	.44			

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974 Figure 1: Schematic Appearance of SEM Results

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989 *Coefficient is significant at .05 level

990 ** Coefficient is significant at .01 level

