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COVID19: Holiday Intentions during a Pandemic

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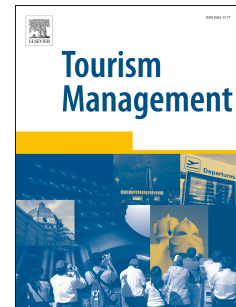
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Journal Pre-proof

## **Title Page**

### **Manuscript Title:**

COVID19: Holiday Intentions during a Pandemic

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# COVID19: Holiday Intentions during a Pandemic

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## Abstract

The travel, tourism and hospitality industries have been the worst affected of the world's major economic sectors during the COVID19 pandemic, which has had a devastating effect on both destinations and organisations. Drawing from a sample (N=385) of adult permanent residents of Athens, Greece, the study examines the impact of COVID19 upon holiday intention. The chaordic systems are evaluated through the use of fuzzy-set Qualitative Comparative Analysis, whilst the study also used Necessary Condition Analysis for the calculation of the size effects of the examined conditions. The findings reveal two sufficient complex configurations leading to holiday intention: (i) holiday risks, and (ii) impact of COVID19. Based on the results, the article also offers a set of managerial implications. The contribution of the study is to both theoretical and methodological tourism domains.

*Keywords:* fuzzy-set Qualitative Comparative Analysis; Necessary Condition Analysis; Coronavirus; holiday intention; Greece

## 22        **1. Introduction**

23        And then, a pandemic came. A pneumonia of unknown cause was first detected in  
24        Wuhan, China, and it was reported to the World Health Organisation (WHO) Country  
25        Office in China on 31<sup>st</sup> December 2019 (WHO, 2020). Actually, the first case of a 55-  
26        year-old man from Hubei province was traced back to 17<sup>th</sup> November 2019, and the  
27        Chinese authorities identified at least 266 cases of Coronavirus (COVID19) before the  
28        end of the year (Ma, 2020). In Europe, COVID19 was first detected on 27<sup>th</sup> December  
29        2019 in France (Roberts, 2020), four days earlier than the first case was reported by  
30        WHO. Since then, many more European countries have begun to report confirmed  
31        cases of COVID19, whilst in the United States the first confirmed case was reported  
32        on 19<sup>th</sup> January (Holshue et al., 2020). The outbreak was declared a Public Health  
33        Emergency of International Concern on 30<sup>th</sup> January, whilst the name ‘COVID19’ for  
34        the new Coronavirus disease was announced by WHO on 11<sup>th</sup> February (WHO,  
35        2020). The scientific community has given the strain an interim name of 2019-nCoV,  
36        taking into account the year of discovery, its status as a ‘novel’ virus, and its family  
37        name (CoV) (Doyle, 2020). On 11<sup>th</sup> March, WHO declared the novel COVID19  
38        outbreak a global pandemic (Cucinotta and Vanelli, 2020). Globally, by the end of the  
39        spring (31<sup>st</sup> May), more than 6.2 million people had been infected with COVID19,  
40        resulting in more than 370,000 fatalities, whilst approximately 2.8 million had  
41        recovered (John Hopkins, 2020).

42

43        The unprecedented COVID19 health crisis has brought the world to a standstill, and  
44        tourism has been the worst affected of all major economic sectors (UNWTO, 2020a).  
45        Concerning the aviation industry up until May 2020, estimates compared with figures  
46        for 2019 show an overall reduction in seats offered by airlines ranging from 32 to 59

47 percent, an overall reduction in passengers ranging from 1.8 million to 3.2 million,  
48 and an overall loss of gross operating revenues for airlines ranging from 240 to 420  
49 billion USD (ICAO, 2020). This has led several airlines, including South African  
50 Airways, Avianca Holdings, Air Mauritius, Virgin Australia, Miami Air International,  
51 BRA, Flybe, RavnAir, Air Deccan, and Trans States Airlines, to declare themselves  
52 bankrupt (Madureira, 2020). In tourism for 2020 the estimated fall in international  
53 arrivals compared with 2019 figures is expected to reach 30 percent, with financial  
54 losses of 450 billion USD in international tourism receipts, almost a third of its global  
55 contribution (UNWTO, 2020b). Accordingly, 75 million jobs are expected to be lost  
56 in 2020 from the tourism sector (WTTC, 2020). All these aspects illustrate a deep  
57 crisis, placing tourism in its darkest hour.

58  
59 Nevertheless, even if COVID19 has brought tourism to uncharted waters, our  
60 knowledge from previous crises (indicatively please read Cirstea [2014], Gurtner  
61 [2016], and Khazai, Mahdavian and Platt [2018]) shows that the industry can quickly  
62 recover and return to normality. A precondition of this is to regain the holiday  
63 intention of visitors. Tourism-related literature has examined a series of effects  
64 generated by disasters and crises. More specifically, several previous studies focused  
65 on crises and evaluated numerous issues such as business efficiency (Pearce II and  
66 Michael, 2006; Olthetena, Sougiannis, Travlos and Zarkos, 2013), productivity  
67 aspects (Mar-Molinero, Menéndez-Plans and Orgaz-Guerrero, 2017; Yépez, 2017),  
68 operational ability (Akrivos, Reklitis and Theodoroyiani, 2014; Epstein, Shapiro and  
69 Gómez, 2017) competitiveness (Cirstea, 2014; Pappas, 2015), innovation output  
70 (García-Pozo, Sanchez-Ollero, and Ons-Cappa, 2016; Naidoo, Ramseook-Munhurrun,  
71 and Seetaram, 2011), and enterprising cooperation (Okumus and Karamustafa, 2005;

72 Voltes-Dorta, Rodríguez-Deniz and Suau-Sanchez, 2017). However, the literature is  
73 predominantly silent upon the examination of holiday intentions during crises, let  
74 alone an unprecedented crisis like COVID19.

75

76 Holiday decision-making is characterised by high complexity levels, especially during  
77 periods of rapid change and uncertainty (Pappas, 2019). This study aims to examine  
78 the impact of COVID19 upon the holiday intention of the residents of Athens, people  
79 living in a country that has successfully managed to minimize the impact of the  
80 pandemic, but has been battling with an economic crisis for more than a decade. To  
81 do so, the research investigates the psychological impact of COVID19, the economic  
82 impact of the pandemic, the recession and COVID19, and the travel, destination and  
83 hospitality risks. The theoretical contribution of the study is a better understanding of  
84 the formulation of holiday intention during a COVID19 nationwide lockdown.

85 Methodologically, its contribution is twofold. First, it examines the complexity of  
86 holiday intentions by using fuzzy-set Qualitative Comparative Analysis, a method that  
87 has only recently been employed in the travel and tourism domain. Second, it  
88 progresses to a complementary analysis of the size effects of the examined conditions  
89 by using Necessary Condition Analysis, a new method in the service sector.

90

## 91 **2. The Greek case**

92 On 26<sup>th</sup> February 2020 the first confirmed case of COVID19 appeared in Greece  
93 (APE-MPE, 2020). The Greek government had taken widespread measures (i.e. the  
94 closure of educational institutions and non-essential services) in order to prevent the  
95 spread of the virus in the very early stages (11<sup>th</sup> March), and it progressed to a  
96 complete lockdown and prohibition of movement on 23<sup>rd</sup> March (Menshouse, 2020).



97 These decisions were taken because of: the lessons learnt from countries (e.g. Italy)  
98 that already had a substantial number of COVID19 fatalities; the shortage of intensive  
99 care units (less than 550 beds throughout the country) (Sarris, 2020); the extensive  
100 lack of medical and paramedical personnel; and the overall bad shape of the national  
101 health system (in the last decade 70,000 beds were lost and 359 hospital departments  
102 were closed) due to extensive budget cuts made over more than a decade to tackle the  
103 Greek economic crisis (Pigadas, 2020). These early stage measures led to a very low  
104 number of fatalities (less than 200) during the first wave (spring 2020) of COVID19.  
105  
106 Conversely, in terms of handling the socio-economic crisis generated by the  
107 pandemic, Greece showed one of the worst performances among EU member states.  
108 Indicatively, when most EU countries were subsidising 70 to 100 percent of lost  
109 salaries, Greece was only covering 50 percent, the level of financial support for the  
110 unemployed (800 €) was one of the lowest in the EU, and there was no protection of  
111 collective employment agreements or mechanism for avoidance of redundancies  
112 (Kopsini, 2020). It should also be noted that COVID19 had already devastated the  
113 Greek tourism and hospitality industry, a sector that contributes approximately 20  
114 percent of the country's Gross Domestic Product (GDP) (Reuters, 2020). According  
115 to the IMF (2020), COVID19 will cause Greece to face a 10 percent loss in GDP  
116 during 2020, and a 5.1 percent loss in 2021.

117

118 To summarise, during the first wave of the pandemic Greece did not face a health  
119 crisis. Due to the effective risk management employed through widespread measures  
120 taken at a very early stage, Greece has avoided a crisis pandemic. On the other hand,  
121 the national economy, already weakened by a prolonged recession, was severely hit

122 by COVID19, whilst the measures taken to avoid the socio-economic effects of the  
123 pandemic were at best inadequate.

124

### 125 **3. Chaos, complexity and chaordic systems**

126 In recent decades, research has paid considerable attention to chaos control in  
127 business systems (Du, Huang and Sheng, 2009). The term ‘chaos’ refers to “a class of  
128 dynamic behaviour of deterministic systems characterized by sensitive dependence on  
129 initial conditions, diverging but constrained trajectories that imply unpredictability,  
130 and complex organisation or structure” (Schuldberg, 2011, p.183). Chaos theory was  
131 initially devised in 1963 (Lawrence, Feng and Huang, 2003), and has proved to be  
132 particularly useful when analysing complex systems (Mahmoudabadi, 2015). The  
133 theory of complexity has developed from the theory of chaos, and is mainly employed  
134 for studies researching aspects that include complex characteristics. Complexity  
135 theory concerns the systems that include several interacting agents, and even if it is  
136 difficult to make predictions, these are structured systems and allow improvement  
137 (Zahra and Ryan, 2007).

138

139 The concept of the ‘chaordic-system’ has emerged from the relationship which is  
140 strong between complexity and chaos (Fitzgerald and Van-Eijnatten, 2002). Hock  
141 (1995) suggested the term ‘chaordic’ term in order to emphasise the character of  
142 chaotically-ordered entities and complex systems. It is derived from the amalgamation  
143 of the words chaos and order, and creates the technical term ‘chaord’ (Van-Eijnatten,  
144 Putnik and Sluga, 2007). The main characteristic of a chaordic system is the dynamic  
145 and complex set of specific elemental connections that formulate a unified whole,  
146 whilst behaviourally it is at the same time unpredictable (chaos) even if it follows

147 specific patterns (order) (Olmedo, 2011). The main features of these systems are  
148 (Olmedo and Mateos, 2015): (i) the impossibility of long-term planning; (ii) their  
149 constant change, and their potential to form new complex structures in a spontaneous  
150 and endogenous manner; and (iii) their substantial influence based upon unexpectedly  
151 dramatic changes. As a result, a chaordic system has long memory (long-range  
152 correlational involvement and chaotic oscillations included in time series and in a  
153 non-stationery nature [Lahmiri, 2017]), self-organisation (systemically exhibiting  
154 emergent properties by internally organising behaviours/operations [Kauffman,  
155 Peterson, Samuelsson and Troein, 2003]), asymmetry (no statistical distribution,  
156 equivalence or equality with regard to operation, functions and behaviours [Waz and  
157 Waz, 2009]), resilience (the system is able to handle the conditions occurred, recover,  
158 and react accordingly [Mycek et al., 2017]), and it is sensitive when dealing with the  
159 initial conditions (the system has the ability to quickly diverge when the conditions  
160 slightly differ [Olmedo and Mateos, 2015]).

161

162 Within a business framework, chaos and complexity theories suggest that when  
163 organisations are at the edge of chaos, having to confront the opposing forces of  
164 stability and instability, they can disconnect from their previous operations and  
165 processes and, based on their ability to organise, accept the emergence of a new order.  
166 In this way, they can abruptly move from one state to another in a qualitative manner  
167 (Smith and Humphries, 2004). During crises and disasters, there is a dramatic increase  
168 in the complexity aspects of a business environment (Coskun and Ozceylan, 2011),  
169 hence, complexity theory is also linked to emergency management (Morakabati,  
170 2016), creating a need for the examination of the formulated chaordic system (Pappas,  
171 2018). At present, forecasting for a long term period of time is unlikely for chaotic

172 systems, and substantial change may occur when it is not expected; hence,  
173 “adaptiveness and flexibility are vital for the survival of organisations (Levy, 1994).  
174  
175 In travel and tourism, destinations and organisations need to gain the highest possible  
176 resilience when facing inevitable crises and disasters (Paraskevas, 2006). As Farrell  
177 and Twining-Ward (2004) suggest, tourism is a complex, uncertain, and unpredictable  
178 system, and the dynamics of tourism anarchy and its non-linear systems of complexity  
179 are essential in transitional periods. An analysis of current crisis management in the  
180 travel and tourism domain shows the need for a different approach to managing  
181 tourism crises due to the likely complex and chaotic nature of these events (Reddy,  
182 Boyd and Nica, 2020). Concerning tourists, they are characterised by complex  
183 psychology, and their perspectives are difficult to quantify, calibrate, and sometimes  
184 justify (Zhai, Zhong and Luo, 2019). Therefore, a complexity-based perspective when  
185 evaluating crises in the travel and tourism industries can provide a better  
186 understanding of tourism crisis management and planning (Reddy et al., 2020).

187

#### 188 **4. Study tenets**

189 The services research literature uses the word ‘tenet’ to describe testable precepts able  
190 to identify some kind of order within chaotic systems (Pappas, 2018) and is  
191 connected with complexity theory (Papatheodorou and Pappas, 2017). The metrics of  
192 consistency and statistical hypotheses are not likely to be included when we employ  
193 outcome scores in order to evaluate the extent to which complex configurations are  
194 adequate (Wu, Yeh, Huan and Woodside, 2014). According to configurational theory,  
195 when considering factor arrangement, different outcomes may be generated from the  
196 same set of causal factors (Ordanini, Parasuraman and Rubera, 2014). This research

197 examines the impact of COVID19 upon the holiday intention of Athenian adult  
198 permanent residents. Therefore, the presence or absence of a given condition (binary  
199 sets) affecting the holiday intention of the respondents was examined. Along with the  
200 socio-demographics of age and monthly income, the six examined attributes were: (i)  
201 the psychological impact of COVID19; (ii) the economic impact of the pandemic; (iii)  
202 the recession and COVID19; (iv) the travel risks; (v) the destination risks; and (vi) the  
203 hospitality risks. Taking into consideration previous research by Olya and Altinay  
204 (2016) and Pappas (2018) for the formulation of tenets, the study includes the  
205 following six:

206

207 T1: A given attribute is able to determine different effects of COVID19 upon holiday  
208 intention in accordance with its configuration/interaction with other attributes.

209 T2: Recipe principle: For the moment that two or more simple conditions formulate a  
210 complex configuration, a condition of outcome is able to have a high consistent score.

211 T3: The interactions/configurations that are complex are able to influence the effect of  
212 COVID19 upon holiday intention.

213 T4: Within different combinations the simple conditions of interactions/configurations  
214 are able to affect in a positive or negative manner the effect of COVID19 upon  
215 holiday intention.

216 T5: Equifinality principle: A sufficient effect of COVID19 upon holiday intention  
217 cannot always be the result of a high score of outcome.

218 T6: When there are high Y scores, a recipe that is considered given for the effect of  
219 COVID19 upon holiday intention is not relevant for all cases.

220

221 As Pappas (2018) suggests, the criteria confirming the above tenets are:

222

223 C1: All eight (two socio-demographics and six attributes) simple conditions must  
224 appear in at least one generated solution.

225 C2: A minimum of two out of eight simple conditions must be included in each  
226 complex configuration generated by the analysis.

227 C3: Each solution must provide a different pathway for holiday intention.

228 C4: Not even one of the examined simple conditions must be present in all generated  
229 sufficient complex configurations.

230 C5: fsQCA must provide at least two sufficient complex configurations for the effect  
231 of COVID19 upon holiday intention.

232 C6: No sufficient complex configuration must appear to have a coverage that can be  
233 applied in all cases.

234

## 235 **5. Methods**

236

### 237 *5.1. Participants*

238 The study area was Athens, Greece. The research sample consisted of permanent adult  
239 residents of Athens recruited during April 2020. From 23<sup>rd</sup> March until 4<sup>th</sup> May the  
240 whole country (including Athens) was in strict lockdown due to COVID19, therefore  
241 the research was based on telephone interviews and used structured questionnaires.

242 More specifically, the participants were randomly contacted using the starting  
243 landline telephone code of 210 followed by seven more digits. Most Athenian  
244 landline telephone numbers follow this pattern. In order to reduce research bias, list-  
245 wise deletion was used (the entire record was excluded from the analysis) for partially

246 completed interviews. When handling missing data, list-wise deletion is considered to  
247 be the least problematic method (Allison, 2001).

248

### 249 *5.2. Sample*

250 The perspectives of the examined population were unknown, since the conditions  
251 under which this research took place were unprecedented. For this reason, the most  
252 conservative response format of 50/50 (50 percent of respondents have a positive  
253 attitude and 50 percent a negative one) had to be assumed (Akis et al., 1996). The  
254 cumulative probability (Z) for a sample larger than 20 people is 1.96 (Sekaran and  
255 Bougie, 2013). Moreover, following Akis, Peristianis and Warner (1996), a minimum  
256 95 percent level of confidence and a maximum five percent statistical error were  
257 taken into consideration. Hence, the sample size was:

258

$$N = \frac{Z^2(\text{hypothesis})}{S^2} \Rightarrow N = \frac{1.96^2(0.5)(0.5)}{0.05^2} \Rightarrow N = 384.16$$

259

260 According to Aaker and Day (1990) the sample size calculation is independent of the  
261 overall size of the population. This is because the sample size determines the error, as  
262 also shown in the formula above. Data gathering was complete when 385 useful  
263 questionnaires had been collected.

264

### 265 *5.3. Measures*

266 The questionnaire consisted of 37 Likert scale statements (1: Strongly disagree; 5:  
267 Strongly agree) and two socio-demographic (age; income) questions. None of the  
268 statements was adopted from previous studies. The research also included two  
269 exclusion questions, since the respondents had to be adult Athenian resident

270 permanently residing in the city for at least the last three years. Concerning the  
271 examined socio-demographics, the study by Pappas (2019) was followed for the age  
272 groupings 18-35, 36-50, and over 50. According to Trading Economics (2020), during  
273 2019 the average monthly income in Greece was 1060 €. The research rounded the  
274 examination threshold to 1000 €.

275

276 The descriptive statistics and factor analysis were made through 'SPSS' software. The  
277 complex statements were evaluated using fuzzy-set Qualitative Comparative Analysis  
278 (fsQCA), by using 'fsQCA' software. The effect size of the examined antecedents  
279 was measured using Necessary Condition Analysis (NCA), by using 'R Studio'  
280 software. According to Longest and Vaisey (2008), fsQCA is a mixed method, since it  
281 combines the empirical testing of quantitative data and the analysis of specific cases  
282 through qualitative inductive reasoning. The research also takes into consideration the  
283 study by Woodside and Zhang (2013), and estimates the inclusion or not of a given  
284 condition (negated sets), indicating the absence of a condition with the symbol "~".  
285 Moreover, NCA was used in order to identify the necessary dataset conditions.

286 According to Dul (2020), this method can be employed in a complementary manner in  
287 both parametric (i.e. regression) and non-parametric analysis (i.e. QCA). It is  
288 important to employ NCA because a necessary condition is considered a vital  
289 outcome factor, and without this condition the outcome will not occur (ERiM, 2020).

290

291 According to Skarmeas, Leonidou and Saridakis (2014), fsQCA can be employed  
292 only when a general asymmetry is present toward the relationships under evaluation,  
293 and the absolute correlated values are less than .6. Table 1 presents the correlation  
294 matrix of the examined coefficients, showing the existence of general asymmetry in



295 acceptable values ( $<.6$ ). As Woodside (2013) suggests, these findings indicate that the  
296 examined causal conditions can lead to the same outcome. The study aims to  
297 investigate the effect of COVID19 on the holiday intentions of adult Athenian  
298 permanent residents, by estimating the complex antecedent conditions (causal recipes)  
299 of the following antecedents: (i) COVID19 psychological impact; (ii) COVID19  
300 economic impact; (iii) recession and COVID19; (iv) travel risks; (v) destination risks;  
301 and (vi) hospitality risks. It also examines the effect of the socio-demographics of age  
302 and monthly income. Further, it employs NCA in a complementary analysis in order  
303 to estimate the size effect of the examined conditions and determine whether they can  
304 lead to the desired outcome.

305

306 Please insert **Table 1**

307

#### 308 *5.4. Algorithms*

309 The research calibration was achieved using 38 randomly selected individual cases.  
310 To examine the holiday intention of the respondents due to COVID19, 'f\_hi', the  
311 fuzzy-sets used were: for age 'f\_a'; for monthly income 'f\_i'; for COVID19  
312 psychological impact 'f\_pci'; for COVID19 economic impact 'f\_cei'; for recession  
313 and COVID19 'f\_rc'; for travel risks 'f\_tr'; for destination risks 'f\_dr'; and for  
314 hospitality risks 'f\_hr'.

315

## 316 **6. Results**

317 The socio-demographic characteristics of the sample are presented in Table 2. The  
318 largest age group was people between 36 and 50 years of age (48.3 percent). There  
319 was an almost equal distribution of respondents with regard to monthly income (a

320 slim majority of 51.7 percent of people had monthly incomes higher than 1000 €).

321 Table 3 illustrates the descriptive statistics for the study, including the Likert scale

322 statements for each examined condition.

323

324 Please insert **Table 2**

325

326 Please insert **Table 3**

327

328 As previously mentioned, all statements were formulated for the current research.

329 Therefore, Exploratory Factor Analysis (EFA) was employed for the examination of

330 the loadings (Table 4). The KMO test score was .772, higher than the minimum

331 acceptable (>.6). Following Norman and Streiner (2008), all the rotated component

332 matrix loadings that scored less than .4 were excluded from further analysis due to

333 low commonality. Reliability analysis was conducted using Cronbach's alpha (A).

334 The overall A was .739, whilst in all cases A was higher than .8 (the minimum

335 acceptable value is .7 [Nunnally, 1978]).

336

337 Please insert **Table 4**

338

### 339 *6.1. Sufficient complex configurations*

340 The results generated three complex solutions able to lead to holiday intention (Table

341 5). The first sufficient configuration (f\_a,~f\_i,~f\_pci,~f\_cei,~f\_rc,f\_tr,f\_dr,f\_hr)

342 includes the socio-demographic of age and has high membership scores concerning

343 travel, destination, and hospitality risks. This complex statement appears to have the

344 highest consistency (.84921) of all three solutions. The second complex solution

345 (f\_a,f\_i,f\_pci,f\_cei,~f\_rc,~f\_tr,~f\_dr,~f\_hr) includes both of the examined socio-  
346 demographics (age; monthly income), and has high scores in COVID19 psychological  
347 and economic impacts. The third solution (~f\_a,f\_i,f\_pci,f\_cei,f\_rc,~f\_tr,~f\_dr,~f\_hr)  
348 embeds the monthly income socio-demographic, and includes high membership  
349 scores for COVID19 psychological and economic impacts, and recession and  
350 COVID19. This sufficient complex configuration has the highest coverage (.46924)  
351 and lowest consistency (.80827).

352

353 Please insert **Table 5**

354

### 355 *6.2. Size effects*

356 The effect size (d) of the examined conditions was evaluated using NCA. As  
357 illustrated in Table 6, ce\_fdh and cr\_fdh are the ceiling zone in the middle parametric  
358 group where the ceiling zone is first displayed, and specify the minimum and  
359 maximum values of X and Y (Dul, 2020). As Dul (2020) indicates, most of the time  
360 ce\_fdh produces a higher ceiling zone than cr\_fdh. The results suggest that almost all  
361 the examined conditions (COVID19 psychological and economic impact; travel,  
362 destination and hospitality risks) show a small effect ( $0 < d < .1$ ). However, recession  
363 and COVID19 appears to have no effect ( $d=0$ ), meaning that its inclusion in a  
364 generated solution cannot lead to the desired outcome. Therefore, the third solution  
365 generated by the fsQCA analysis (~f\_a,f\_i,f\_ci,f\_cei,f\_rc,~f\_tr,~f\_dr,~f\_hr) should be  
366 disregarded. Figure 1 visually presents the NCA results.

367

368 Please insert **Table 6**

369

370 Please insert **Figure 1**

371

## 372 **7. Discussion**

373

### 374 *7.1. Confirmation of tenets*

375 Although NCA has excluded the third sufficient complex configuration generated by  
376 fsQCA, the evaluation of whether the tenets are confirmed should include all three  
377 solutions. This is because NCA was a complementary method used to evaluate the  
378 size effects of the examined conditions, and did not affect the generation,  
379 combination, and efficiency of complex configurations as they were generated by  
380 fsQCA.

381

382 Table 5 presents the coverage of the three sufficient complex configurations, which is  
383 high (.43556). Moreover, all eight of the simple conditions are present in at least one  
384 of the generated complex sufficient configurations, regardless of the fact that all  
385 solutions end up having the same outcome. This shows that each attribute has a  
386 contribution in a different way to the formulation of respondents' holiday intention  
387 related with the combination with the rest of the simple conditions. Therefore, the first  
388 tenet (T1) is confirmed. All three of the solutions include four attributes (more than  
389 two simple conditions are needed in order to create a complex configuration), and  
390 lead to the same outcome. Previous studies, such as Woodside (2014) and Pappas  
391 (2018), highlight this finding, and subsequently confirm the second tenet (T2). As  
392 previously mentioned, fsQCA is not based on variables but cases, and their solutions  
393 deal with (Ordanini et al., 2014): (i) an outcome concerning the combination of the  
394 examined antecedents; and (ii) the way these conditions are related within the specific

395 combination. Therefore, each sufficient complex configuration is generated through  
396 the complexity that specific simple antecedents interact, affecting the final outcome  
397 (Olya and Altinay, 2016). Thus the third tenet (T3) is confirmed. The inclusion or  
398 exclusion of specific attributes (contrarian case analysis) has shown that whether a  
399 simple condition is present or absent influences the effect upon the desired outcome,  
400 and in our case of COVID19 upon holiday intention. This actually confirms the fourth  
401 tenet (T4). As Woodside (2014, p.2499) suggests, “the occurrences of different paths  
402 usually do not occur with the same frequency among the set of paths”. The principle  
403 of equifinality shows that multiple paths (in our case three) are able to lead to the  
404 same outcome. Hence, the findings confirm the fifth tenet (T5). Finally, Table 5  
405 highlights that the coverage of the generated solutions varies from .41382 to .46924.  
406 According to Olya and Altinay (2016) and Pappas (2018), this finding indicates that  
407 no sufficient complex configuration applies in all cases. Each solution only partially  
408 covers the examined sample. On the other hand, the sum of solutions significantly  
409 covers the examined population of Athenians. This case relevance leads to  
410 confirmation of the last formulated tenet (T6).

411

## 412 *7.2. Complex solutions*

413 Of the three solutions generated using fsQCA, only two should be taken into  
414 consideration (the third was disregarded following the evaluation of size effects by  
415 NCA). These two sufficient configurations meet the aim of the study by showcasing  
416 the effect of COVID19 upon the Athenian residents with regards to their holidays.  
417 The first sufficient complex configuration reveals that holiday risks (travel;  
418 destination; hospitality) affect the related COVID19 holiday intention of respondents.  
419 More specifically, high scores appear for age (f\_a), travel risks (f\_tr), destination risks

420 (f\_dr), and hospitality risks (f\_hr). In this solution the socio-demographic of age  
421 seems to play an important role in the formulation of holiday intention. This can be  
422 explained by the fact that the older people are, the higher the proportion of fatalities  
423 from COVID19. More specifically, taking into consideration the USA, the country  
424 with most fatalities worldwide, amongst younger adults (aged 18 to 44) the share of  
425 deaths was lower than four percent, whilst for people over 75 years of age that share  
426 rocketed to almost 50 percent (Worldometer, 2020). As a result, older people are  
427 likely to be much more worried about the risks of taking a holiday. With regards to  
428 COVID19, these aspects highlight the importance of age when destinations and  
429 tourism-related enterprises target specific market segments, and employ their crisis  
430 management communications. One more aspect that needs to be taken into  
431 consideration is the high susceptibility of tourism to risks and crises. Several past  
432 studies (indicatively please read Hajibaba, Gretzel, Leisch and Dolnicar [2015] and  
433 Pappas and Papatheodorou [2017]) highlight the vulnerability of the industry to crises  
434 and disasters. This is because the sector is characterized by numerous interacting  
435 entities and activities critically vulnerable to crises (Cole, 2009) leading to an inherent  
436 non-linearity of the respective relationships, which prevents the effective coupling of  
437 causes and consequences (Olmedo and Mateos, 2015). As a result, the current  
438 sufficient complex configuration confirms findings from previous studies concerning  
439 the effect of risks upon holiday intention, provides evidence of the importance of  
440 holiday risks related to COVID19, and highlights the crucial age factor with respect to  
441 tourism during the current pandemic.

442

443 The second acceptable complex configuration concerns the impact of COVID19 upon  
444 holiday intention. More specifically, this solution scores highly for age (f\_a), income

445 (f<sub>i</sub>), psychological impact of COVID19 (f<sub>pci</sub>), and the economic impact of  
446 COVID19 (f<sub>cei</sub>). As a result, the study contributes by providing a connection of  
447 those aspects in terms of COVID19 impact to travel intention, providing the grounds  
448 to destinations and tourism-related enterprises to more effectively assess the business  
449 environment, and create sufficient pathways that can lead to the unmentioned  
450 travel intention. Once more, the socio-demographic of age in present, as in the first  
451 solution, this time alongside monthly income. The latter can be explained, since  
452 recent studies reveal that almost three quarters of Greeks (73 percent) perceive that  
453 the arrival of COVID19, the lockdown that followed, the devastation of the Greek  
454 tourist season that has already heavily affected tourism operations in the country, and  
455 a potential second outbreak from the autumn onwards have significantly affected their  
456 income (Financial Press, 2020). Monthly income is not something that affects only  
457 Greece, considering that a third of the population of the G7 (the seven wealthiest  
458 economies in the world) share the same income perspectives (Enikonomia.gr, 2020),  
459 whilst it is estimated that worldwide COVID19 will lead between 420 and 580 million  
460 people into poverty (UNU, 2020). However, the connection between monthly income  
461 and the simple condition of COVID19 economic impact (f<sub>cei</sub>), and subsequently  
462 with the psychological impact of the pandemic (f<sub>pci</sub>) is justified, since the  
463 statements of the latter evaluate a holistic perspective by discussing everyday life,  
464 people's way of life, hygiene, and fear and anxiety issues. Therefore, the current  
465 sufficient complex configuration provides evidence for the extent of the impact of  
466 COVID19 and the respondents' holiday intention, and reveals a reluctance to take  
467 holidays at least for the foreseeable future. Hence, it can be presumed that the return  
468 from COVID19 to tourism normality is not likely to be as fast as that following crises  
469 and disasters the sector has faced in the past.

470

471 The findings actually confirm the complex character of tourism decision making,  
472 especially during crisis periods, as also highlighted by previous studies (indicatively,  
473 please read Farrell and Twining-Ward, [2004], and Pappas [2019]). They also  
474 highlight the need for adopting a complexity-based perspective when evaluating crises  
475 in the travel and tourism industries (Reddy et al., 2020).

476

### 477 *7.3. Managerial implications*

478 The study uses fsQCA to examine the complexity of the effect of COVID19 upon the  
479 holiday intention of adults living permanently in Athens. It further progresses to a  
480 complementary analysis of the size effect of the examined conditions using NCA.  
481 After disregarding one solution based upon the NCA results, the findings reveal two  
482 sufficient complex configurations focusing on: (i) holiday risks, and (ii) the impact of  
483 COVID19.

484

485 The chaotic systems affecting holiday intention as a result of COVID19 and  
486 identified by the research findings create a necessity for collaboration within the  
487 tourism industry that is more vital than ever. Safety comes first. Transportation  
488 companies (with special reference to the aviation industry) should create grounds for  
489 people to feel safe to travel again. These can include several initiatives such as the ad-  
490 hoc communication with customers concerning health and safety measures and  
491 advancements from travel companies, and relevant press releases focusing on the  
492 safety of the transport means (air; land; sea). This is always the case for travel,  
493 whether for business or leisure, but is even more relevant to holiday trips, since they  
494 are considered to be discretionary activities and are characterized by high elasticity



495 (Papatheodorou and Pappas, 2017). Safety also concerns destinations and hospitality  
496 firms. Social distancing is likely to last for a long time, since it is more than likely that  
497 there will not be a vaccine in 2021 (Lanese, 2020; Spinney, 2020). Therefore, it is  
498 crucial that destinations adopt all the necessary precautionary measures to ensure the  
499 safety of, as well as a feeling of safety amongst, their visitors. Destination initiatives  
500 can include crisis management communications addressed to both, visitors and tour  
501 operators in order to promote the undertaken actions for making a safer environment,  
502 the fast destination adaptability to the new reality, the strengthening of the health  
503 system and infrastructure in the destination and overall in the country in reference, the  
504 progress of confirmed COVID19 cases and related fatalities, the undertaken measures  
505 to protect the locals and the visitors, and the reshaped quality levels (with special  
506 focus on hygiene aspects) of the provided tourist products and services. The same  
507 applies to hospitality firms, whilst pressure for much lower occupancy rates (hence  
508 lower profitability) is substantial for both accommodation and service providers.  
509 Maybe this is one of the most appropriate times to also start talking about  
510 international collaborations and international uniformity of safety measures  
511 throughout the components of tourism in order to minimize potential confusion and  
512 the subsequent fear and anxiety levels of holidaymakers.

513

514 Another aspect is the extent to which people will be able to go on holiday. It is  
515 apparent from national and global forecasts, and supported by the findings of the  
516 current research, that a considerable number of people who were used to travelling for  
517 their holidays now consider it unlikely that they will be able to do so due to the  
518 widespread economic devastation COVID19 has created. This means that the value-  
519 for-money aspect is more crucial than at any other time. Travel, tourism and

520 hospitality firms, along with destinations, need to offer much higher quality to their  
521 products and services with a parallel reduction in prices. The subsequent reduction in  
522 profits can be handled with various ways involving the financial flexibility of  
523 enterprises, the restructuring of operations, and collaborative activities with other  
524 destinations and firms, even with those that might have been perceived as competitors  
525 in the past. COVID19 has violently reshaped the global tourism scenery, rapidly  
526 passing from ‘overtourism’ to ‘undertourism’, and especially affecting tourism-  
527 dependent economies (Johnston, 2020; Tarlow, 2020). Destinations and tourism-  
528 related enterprises do not have the ‘luxury’ they had in the past of depending for  
529 profitability on high volumes of tourists. Combined with the austerity in several  
530 countries (in our case Greece), it is more than certain that tourism has to face a  
531 substantial challenge to recover. Hence, international collaboration and support  
532 focusing on further economic development can strengthen tourism potential in  
533 national and international level. So as with COVID19 any collaboration cannot be  
534 fragmented in national borders.

535

536 Finally, the complex dynamics of the chaordic systems concerning tourism decision-  
537 making suggest that the intentions of people can be better examined using methods of  
538 non-parametric analysis (such as fsQCA) rather than linear assumptions. Several  
539 studies in the service sector (indicatively please read Ordanini et al. [2014], Pappas  
540 [2019], and Skarmeas et al. [2014]) have already highlighted that linear analysis is not  
541 able to encapsulate the full spectrum of this complexity. However, travel, tourism and  
542 hospitality research is still heavily dependent on the reductionist linear (Newtonian)  
543 approach. As it is showcased by the findings (also supported by previous studies  
544 mentioned above), in an academic context the use of non-parametric analysis in

545 travel, tourism and hospitality is able to provide a more holistic approach of the  
546 aspects under examination. Therefore, shifting the research focus on the examination  
547 of more complex aspects can further enhance our understanding of tourism-related  
548 phenomena and conditions. Especially during crisis periods where complexity  
549 substantially increases and several other crises may be triggered by the first (Pappas,  
550 2018) (in our case the socio-economic crises initiated by the COVID19 health crisis),  
551 the identification of multiple pathways that can lead to the same outcome is of the  
552 utmost importance.

553

## 554 **8. Conclusions**

555 This study has focused on the chaordic effect of COVID19 on the holiday intention of  
556 adult permanent residents of Athens, Greece. Theoretically, the research provides a  
557 better comprehension of the complexity of holiday intention formulation during a  
558 COVID19 pandemic. In the methodological domain, its contribution is based on the  
559 examination of complexity through the use of fsQCA, a non-linear mixed method that  
560 has only recently been employed in the field of tourism. It also contributes by adopting  
561 NCA as a complementary method for measuring the size effects of the examined  
562 conditions, which is new (to the best of the author's knowledge) not only in tourism,  
563 but generally in the service sector. Based on complex configurations, the findings  
564 suggested two different pathways (holiday risks; impact of COVID19) that can lead to  
565 the same outcome (holiday intention). The article also identifies several managerial  
566 implications related to the research results.

567

568 Despite the theoretical and methodological contribution of the study, several  
569 limitations need to be considered. First, this is the first time in the modern era that the

570 travel, tourism and hospitality industries have faced such an extensive and devastating  
571 crisis. Therefore, much more research is necessary for a full understanding of the  
572 unprecedented conditions the world has to face, and tourism has to confront. This is  
573 strengthened by the fact that COVID19 first appeared in mid-November 2019, and  
574 within a very short time has violently managed to change the way we think, act, and  
575 react. This aspect is also strengthened by the perspective that the travel intentions of  
576 tourists may differ due to various reasons such as the preference of domestic or  
577 international travel, due to state/government restrictions, the knowledge of language  
578 and culture, the perception of feeling more safe near home etc. The second limitation  
579 derives from the environment of the current research. The examined population was  
580 interviewed during a period of strict lockdown (April 2020), in the capital of a  
581 country (Athens, Greece) that has successfully managed to avoid (at least during the  
582 first wave of the pandemic) a health crisis, but is heavily dependent on tourism, and  
583 has battled for more than a decade with an economic crisis (the most severe on  
584 European soil [Pappas, 2018]) whilst COVID19 has further deepened its already  
585 devastating socio-economic effects. Therefore, any replication and generalization of  
586 the findings should be made with caution. Third, the research only evaluates the  
587 holiday intention of permanent adult residents of Athens. A comparison of the  
588 perspectives of these people, the destination authorities, and the travel and tourism  
589 stakeholders, alongside those of people who select Greece as their holiday destination,  
590 would provide a better understanding of the chaotic perspectives generated by the  
591 effect of COVID19. Finally, it might be useful to examine several other  
592 characteristics of the respondents such as their work environment and status, and job  
593 vulnerability. Such analysis could provide further information concerning their  
594 decision-making upon holiday intention.

595

596 Extreme times call for extreme measures. COVID19 can be considered not only as a  
597 major threat to the travel and tourism industry, but also as a great opportunity to  
598 change our way of thinking, and to quickly adapt to the new reality. Unfortunately,  
599 regardless of the globally devastating effect of the current pandemic, there are other  
600 imminent crises (i.e. climate change) that are likely to be much more destructive than  
601 COVID19. The lessons we learn could become pathways to our future, and the way  
602 we face the treats might determine our foreseeable survival and prosperity.

603

#### 604 **References**

605 Aaker, D., & Day, G. (1990). *Marketing research*, New York: Wiley.

606 Akis, S., Peristianis, N., & Warner, J. (1996). Residents' attitudes to tourism  
607 development: the case of Cyprus. *Tourism Management*, 17(7), 481-494.

608 Akrivos, C., Reklitis, P., & Theodoroyiani, M. (2014). Tourism entrepreneurship and  
609 the adoption of sustainable resources. The case of Evritania prefecture. *Procedia*  
610 *Social and Behavioral Studies*, 148, 378-382.

611 Allison, P.D. (2001). *Missing data*. Thousand Oaks: Sage Publications.

612 APE-MPE (2020). *The first case of Coronavirus in Greece – positive sample in*

613 *Thessaloniki*. Published 26 February, Available from:

614 <https://www.amna.gr/home/article/434170/To-proto-krousma-koronaious-stin->

615 [Ellada](https://www.amna.gr/home/article/434170/To-proto-krousma-koronaious-stin-Ellada) (Accessed 23/5/2020) [in Greek]

616 Cirstea, S.D. (2014). Travel & tourism competitiveness: A study of world's top  
617 competitive countries. *Procedia Economics and Finance*, 15, 1273-1280.

618 Cole, S. (2009). A logistic tourism model: Resort cycles, globalization, and chaos.

619 *Annals of Tourism Research*, 36(4), 689-714.

- 620 Coskun, E., and Ozceylan, D. (2011). Complexity in Emergency Management and  
621 Disaster Response Information Systems (EMDRIS). Paper presented at the *8th*  
622 *International ISCRAM Conference*, 8-11 May, Lisbon, Portugal.
- 623 Cucinotta, D., & Vanelli, M. (2020). WHO Declares COVID-19 a Pandemic. *Acta*  
624 *Biomed*, *91*(1), 157-160.
- 625 Doyle, L. (2020). Coronavirus named: What does COVID-19 stand for? Coronavirus  
626 name meaning. *Express*, Published 15<sup>th</sup> May, Available from:  
627 [https://www.express.co.uk/life-style/health/1241302/Coronavirus-named-COVID-](https://www.express.co.uk/life-style/health/1241302/Coronavirus-named-COVID-19-meaning-WHO-coronavirus-latest-update)  
628 [19-meaning-WHO-coronavirus-latest-update](https://www.express.co.uk/life-style/health/1241302/Coronavirus-named-COVID-19-meaning-WHO-coronavirus-latest-update) (Accessed 23/5/2020)
- 629 Du, J., Huang, T., & Sheng, Z. (2009). Analysis of decision-making in economic  
630 chaos control. *Nonlinear Analysis: Real World Applications*, *10*(4), 2493-2501.
- 631 Dul, J. (2020). *Conducting Necessary Condition Analysis*. Thousand Oaks: Sage  
632 Publications.
- 633 Enikonomia.gr (2020). *Coronavirus: The income of one out of three citizens of G7*  
634 *has been affected*. Published 17<sup>th</sup> April, Available from:  
635 [http://www.enikonomia.gr/international/233836,koronoios-pligma-sto-eisodima-](http://www.enikonomia.gr/international/233836,koronoios-pligma-sto-eisodima-ypesti-1-stous-3-polites-tis-g7.html)  
636 [ypesti-1-stous-3-polites-tis-g7.html](http://www.enikonomia.gr/international/233836,koronoios-pligma-sto-eisodima-ypesti-1-stous-3-polites-tis-g7.html) (Accessed 25/5/2020) [in Greek]
- 637 Epstein, B., Shapiro, A.F., & Gómez, A.G. (2017). Financial disruptions and the  
638 cyclical upgrading of labor. *Review of Economic Dynamics*, *26*, 204-224.
- 639 ERiM (2020). *What is NCA?* Erasmus University Rotterdam. Available from:  
640 <https://www.irim.eur.nl/necessary-condition-analysis/about-nca/what-is-nca/>  
641 (Accessed 17/5/2020)
- 642 Financial Press (2020). *Gallop: Seven out of ten Greeks perceive negative income*  
643 *impacts*. Published 1<sup>st</sup> April, Available from:

- 644 <https://www.fpress.gr/diafora/story/63580/dimoskopisi-epta-stoys-deka-vlepoynepiptoseis-sto-eisodima> (Accessed 24/5/2020) [in Greek]
- 645
- 646 Fitzgerald, L.A., & Van-Eijnatten, F.M. (2002). Reflections: chaos in organizational  
647 change. *Journal of Organizational Change Management*, 15(4), 402-411.
- 648 García-Pozo, A., Sanchez-Ollero, J.L., Ons-Cappa, M. (2016). ECO-innovation and  
649 economic crisis: a comparative analysis of environmental good practices and  
650 labour productivity in the Spanish hotel industry. *Journal of Cleaner Production*,  
651 138, 131-138.
- 652 Gurtner, Y. (2016). Returning to paradise: Investigating issues of tourism crisis and  
653 disaster recovery on the island of Bali. *Journal of Hospitality and Tourism  
654 Management*, 28, 11-19.
- 655 Hajibaba, H., Gretzel, U., Leisch, F., & Dolnicar, S. (2015). Crisis-resistant tourists.  
656 *Annals of Tourism Research*, 53, 46-60.
- 657 Hock, D.W. (1996). The chaordic organization: Out of control and into order. *World  
658 Business Academy Perspectives*, 9(1), 5-18.
- 659 Holshue, M.L. et al. (2020). First Case of 2019 Novel Coronavirus in the United  
660 States. *The New England Journal of Medicine*, 382, 929-936.
- 661 ICAO (2020). *Effects of novel Coronavirus (COVID-19) on civil aviation: Economic  
662 impact analysis*. International Civil Aviation Organisation. Montreal: ICAO.
- 663 IMF (2020). *Policy responses to COVID-19*. International Monetary Fund, Available  
664 from: [https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-  
665 COVID-19#G](https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#G) (Accessed 23/5/2020)
- 666 John Hopkins (2020). *COVID-19 Dashboard by the Center for Systems Science and  
667 Engineering (CSSE) at Johns Hopkins University (JHU)*. Available from:  
668 <https://coronavirus.jhu.edu/map.html> (Accessed 1/6/2020)

- 669 Johnston, E. (2020). Outbreak turns Kyoto's overtourism into 'undertourism'. *The*  
670 *Japan Times*, Published 14<sup>th</sup> March, Available from:  
671 [https://www.japantimes.co.jp/news/2020/03/14/national/outbreak-turns-kyotos-](https://www.japantimes.co.jp/news/2020/03/14/national/outbreak-turns-kyotos-overtourism-undertourism/#.Xspo9mhKhPY)  
672 [overtourism-undertourism/#.Xspo9mhKhPY](https://www.japantimes.co.jp/news/2020/03/14/national/outbreak-turns-kyotos-overtourism-undertourism/#.Xspo9mhKhPY) (Accessed 27/5/2020)
- 673 Kauffman, S., Peterson, C., Samuelsson, B., & Troein, C. (2003). Random Boolean  
674 net-work models and the yeast transcriptional network. In: *Proceedings of the*  
675 *National Academy of Sciences of the United States of America*, 100(25), 14796–  
676 14799.
- 677 Khazai, B., Mahdavian, F., & Platt, S. (2018). Tourism Recovery Scorecard (TOURS)  
678 – Benchmarking and monitoring progress on disaster recovery in tourism  
679 destinations. *International Journal of Disaster Risk Reduction*, 27, 75-84.
- 680 Kopsini X. (2020). The support measures for employees in European countries and  
681 the tip of the Greek government. *Efsyn*, Published 26<sup>th</sup> March, Available from:  
682 [https://www.candiadoc.gr/2020/03/26/ta-metra-stirixis-poy-](https://www.candiadoc.gr/2020/03/26/ta-metra-stirixis-poy-pairnoyn/#.XsjqpWhKhPY)  
683 [pairnoyn/#.XsjqpWhKhPY](https://www.candiadoc.gr/2020/03/26/ta-metra-stirixis-poy-pairnoyn/#.XsjqpWhKhPY) (Accessed 23/5/2020) [in Greek]
- 684 Lahmiri, S. (2017). On fractality and chaos in Moroccan family business stock returns  
685 and volatility. *Physica A*, 473, 29-39.
- 686 Lanese, N. (2020). When will a COVID-19 vaccine be ready? *Live Science*, Published  
687 16<sup>th</sup> April, Available from: [https://www.livescience.com/coronavirus-covid-19-](https://www.livescience.com/coronavirus-covid-19-vaccine-timeline.html)  
688 [vaccine-timeline.html](https://www.livescience.com/coronavirus-covid-19-vaccine-timeline.html) (Accessed 27/5/2020)
- 689 Lawrence, W.L., Feng, Y.L., & Huang, Y.C. (2003). Diagnosis of Freeway traffic  
690 incidents with chaos theory. *Journal of the Eastern Asia Society for Transportation*  
691 *Studies*, 5, 2025-2038.
- 692 Levy, D. (1994). Chaos theory and strategy: Theory, application and managerial  
693 implications. *Strategic Management Journal*, 15(Summer), 167-178.



- 694 Longest, K., & Vaisey, S. (2008). Fuzzy: A Program for performing Qualitative  
695 Comparative Analyses (QCA) in STATA. *The STATA Journal*, 8(1), 79-104.
- 696 Ma, J. (2020). Coronavirus: China's first confirmed Covid-19 case traced back to  
697 November 17. *South China Morning Post*, Published 13 March, Available from:  
698 [https://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-](https://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back)  
699 [first-confirmed-covid-19-case-traced-back](https://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back) (Accessed 20/5/2020)
- 700 Madureira, C. (2020). COVID-19: List of airlines that didn't survive. *Sam Chui*  
701 *Aviation & Travel*, published 12<sup>th</sup> May, Available from:  
702 [https://samchui.com/2020/05/12/covid-19-list-of-airlines-that-didnt-](https://samchui.com/2020/05/12/covid-19-list-of-airlines-that-didnt-survive/#.XslAfGhKhPY)  
703 [survive/#.XslAfGhKhPY](https://samchui.com/2020/05/12/covid-19-list-of-airlines-that-didnt-survive/#.XslAfGhKhPY) (Accessed 22/5/2020)
- 704 Mahmoudabadi, A. (2015). Developing a chaotic pattern of dynamic risk definition  
705 for solving hazardous material routing-locating problem. *Journal of Loss*  
706 *Prevention in the Process Industries*, 37, 1-10.
- 707 Mar-Molinero, C., Menéndez-Plans, C., & Orgaz-Guerrero, N. (2017). Has the 2008  
708 financial crisis changed the factors determining the systematic risk of shares in the  
709 "European Hospitality Industry"? (2003-2013). *Journal of Hospitality & Tourism*  
710 *Management*, 31, 59-69.
- 711 Menshouse (2020). The reason that Greece has less cases than the country with the  
712 best health system worldwide. Available from:  
713 [https://menshouse.gr/epikerotita/123645/o-logos-poy-i-ellada-echei-ligotera-](https://menshouse.gr/epikerotita/123645/o-logos-poy-i-ellada-echei-ligotera-kroysmata-apo-ti-chora-me-to-kalytero-systima-ygeias-ston-kosmo)  
714 [kroysmata-apo-ti-chora-me-to-kalytero-systima-ygeias-ston-kosmo](https://menshouse.gr/epikerotita/123645/o-logos-poy-i-ellada-echei-ligotera-kroysmata-apo-ti-chora-me-to-kalytero-systima-ygeias-ston-kosmo) (Accessed  
715 23/5/2020) [in Greek]
- 716 Morakabati, Y., Page, S., & Fletcher, J. (2017). Emergency Management and Tourism  
717 Stakeholder Responses to Crises: A Global Survey. *Journal of Travel Research*.  
718 56(3), 299-316.

- 719 Mycek, P., Contreras, A., Le Maître, O., Sargsyan, K., Rizzi, F., Morris, K., Safta, C.,  
720 Debusschere, B., & Knio, O. (2017). A resilient domain decomposition polynomial  
721 chaos solver for uncertain elliptic PDEs. *Computer Physics Communications*, 216,  
722 18-34.
- 723 Naidoo, P., Ramseook-Munhurrun, P., & Seetaram, A.K. (2011). Marketing the hotel  
724 sector in economic crisis. Evidence from Mauricius. *Global Journal of Business*  
725 *Research*, 5(2), 1-12.
- 726 Norman, G., & Streiner, D. (2008). *Biostatistics: The bare essentials*. 3<sup>rd</sup> Eds.,  
727 Hamilton: Decker.
- 728 Nunnally, J.C. (1978). *Psychometric theory*. 2<sup>nd</sup> Eds., New York: McGraw-Hill.
- 729 Okumus, F., & Karamustafa, K. (2005). Impact of an economic crisis: Evidence from  
730 Turkey. *Annals of Tourism Research*, 32(4), 942-961.
- 731 Olmedo, E. (2011). Is there chaos in the Spanish labour market? *Chaos, Solitons and*  
732 *Fractals*, 44(12), 1045-1053.
- 733 Olthetena, E., Sougiannis, T., Travlos, N., & Zarkos, S. (2013). Greece in the  
734 Eurozone: Lessons from a decade of experience. *The Quarterly Review of*  
735 *Economics and Finance*, 53, 317-335.
- 736 Olya, H.G., & Altinay, L. (2016). Asymmetric modeling of intention to purchase  
737 tourism weather insurance and loyalty. *Journal of Business Research*, 69(8), 2791-  
738 2800.
- 739 Ordanini, A., Parasuraman, A., & Rubera, G. (2014). When the recipe is more  
740 important than the ingredients: A Qualitative Comparative Analysis (QCA) of  
741 service innovation configurations. *Journal of Service Research*, 17(2), 134-149.

- 742 Papatheodorou, A. & Pappas, N. (2017). Economic recession job vulnerability and  
743 tourism decision-making: A Qualitative Comparative Analysis. *Journal of Travel*  
744 *Research*, 56(5), 663-677.
- 745 Pappas, N. & Papatheodorou, A. (2017). Tourism and the refugee crisis in Greece:  
746 Perceptions and decision-making of accommodation providers. *Tourism*  
747 *Management*, 63, 31-41.
- 748 Pappas, N. (2015). Achieving competitiveness in Greek accommodation  
749 establishments during recession. *International Journal of Tourism Research*, 17(4),  
750 375-387.
- 751 Pappas, N. (2018). Hotel decision-making during multiple crises: A chaordic  
752 perspective. *Tourism Management*, 68, 450-464.
- 753 Pappas, N. (2019). UK outbound travel and Brexit complexity. *Tourism Management*,  
754 79, 12-22.
- 755 Paraskevas, A. (2006). Crisis management or crisis response system? A complexity  
756 science approach to organizational crises. *Management Decision*, 44(7), 892-907.
- 757 Pearce II, J.A., & Michael, S.C. (2006). Strategies to prevent economic recessions  
758 from causing business failure. *Business Horizons*, 49(3), 201-209.
- 759 Pigadas, A. (2020). A health system with porcelain legs. *Efsyn*, Published 11<sup>th</sup> April,  
760 Available from: [https://www.efsyn.gr/nisides/238921\\_ena-systima-ygeias-me-](https://www.efsyn.gr/nisides/238921_ena-systima-ygeias-me-pilina-podia)  
761 [pilina-podia](https://www.efsyn.gr/nisides/238921_ena-systima-ygeias-me-pilina-podia) (Accessed 23/5/2020) [in Greek]
- 762 Reddy, M.V., Boyd, S.W., & Nica, M. (2020). Towards a post-conflict tourism  
763 recovery framework. *Annals of Tourism Research*, Article in press.
- 764 Reuters (2020). *Coronavirus tourism strike threatens the Greek achievements of the*  
765 *last 10 years*. Published 11<sup>th</sup> May, Available from:  
766 <https://www.capital.gr/oikonomia/3452406/reuters-to-pligma-tou-koronoiou-ston->

- 767 [tourismo-apeilei-kopous-kai-epiteugmata-10-eton-gia-tin-ellada](#) (Accessed  
768 23/5/2020) [in Greek]
- 769 Roberts, M. (2020). Coronavirus: France's first known case 'was in December'. *BBC*,  
770 Published 5<sup>th</sup> May, Available from: <https://www.bbc.com/news/world-europe-52526554> (Accessed 21/5/2020)  
771
- 772 Sarris, G. (2020). What needs to be done for avoiding the collapse of the health  
773 system due to Coronavirus. *Newsbeast*, Published 21<sup>st</sup> March, Available from:  
774 [https://www.newsbeast.gr/weekend/arthro/6119015/ti-prepei-na-ginei-oste-na-min-  
775 katarreysei-to-systima-ygeias-stin-ellada-logo-koronoioy](https://www.newsbeast.gr/weekend/arthro/6119015/ti-prepei-na-ginei-oste-na-min-katarreysei-to-systima-ygeias-stin-ellada-logo-koronoioy) (Accessed 23/5/2020) [in  
776 Greek]
- 777 Schuldberg, D. (2011). Chaos theory and creativity. *Encyclopedia of Creativity*, 183-  
778 191.
- 779 Sekaran, U., & Bougie, R. (2013). *Research methods for business: A skill building  
780 approach*. Chennai: Wiley and Sons.
- 781 Skarmeas, D., Leonidou, C.N., & Saridakis, C. (2014). Examining the role of CSR  
782 skepticism using fuzzy-set qualitative comparative analysis. *Journal of Business  
783 Research*, 67, 1796-1805.
- 784 Smith, A. & Humphries, C. (2004). Complexity theory as a practical management  
785 tool: A critical evaluation. *Organization Management Journal*, 1(2), 91-106.
- 786 Spinney, L. (2020). Coronavirus vaccine: when will we have one? *The Guardian*,  
787 Published 19<sup>th</sup> April, Available from:  
788 [https://www.theguardian.com/world/2020/apr/19/coronavirus-vaccine-when-will-  
789 we-have-one](https://www.theguardian.com/world/2020/apr/19/coronavirus-vaccine-when-will-we-have-one) (Accessed 27/5/2020)
- 790 Tarlow, P.E. (2020). *Working in the Travel Industry during Coronavirus: Turning  
791 Overtourism to Undertourism*. Published 16<sup>th</sup> March, Available from:

- 792 [https://www.eturbonews.com/567224/working-in-the-travel-industry-during-  
793 coronavirus-turning-overtourism-to-undertourism/](https://www.eturbonews.com/567224/working-in-the-travel-industry-during-<br/>793 coronavirus-turning-overtourism-to-undertourism/) (Accessed 27/5/2020)
- 794 Trading Economics (2020). Greece average monthly salary. Available from:  
795 <https://tradingeconomics.com/greece/wages> (Accessed 23/5/2020)
- 796 UNU (2020). *Estimates of the impact of COVID-19 on global poverty*. United Nations  
797 University, Available from: [https://www.wider.unu.edu/publication/estimates-  
798 impact-covid-19-global-poverty](https://www.wider.unu.edu/publication/estimates-<br/>798 impact-covid-19-global-poverty) (Accessed 25/5/2020).
- 799 UNWTO (2020a). *COVID19: Putting people first*. United Nations World Tourism  
800 Organisation, Available from: <https://www.unwto.org/tourism-covid-19> (Accessed  
801 24/5/2020)
- 802 UNWTO (2020b). *Impact assessment of the COVID-19 outbreak on international  
803 tourism*. Available from: [https://www.unwto.org/impact-assessment-of-the-covid-  
804 19-outbreak-on-international-tourism](https://www.unwto.org/impact-assessment-of-the-covid-<br/>804 19-outbreak-on-international-tourism) (Accessed 24/5/2020)
- 805 Van-Eijnatten, F.M., Putnik, G.T., & Sluga, A. (2007). Chaordic systems thinking for  
806 novelty in contemporary manufacturing. *CIRP Annals - Manufacturing  
807 Technology*, 56(1), 447-450.
- 808 Voltes-Dorta, A., Rodríguez-Deniz, H., & Suau-Sanchez, P. (2017). Passenger  
809 recovery after an airport closure at tourist destinations: A case study of Palma de  
810 Mallorca airport. *Tourism Management*, 59, 449-466.
- 811 Waz, P., & Waz, D.B. (2009). Asymmetry coefficients as indicators of chaos. *Acta  
812 Physica Polonica A*, 116(6), 987-991.
- 813 WHO (2020). *Rolling updates on coronavirus disease (COVID-19)*. World Health  
814 Organisation. Available from: [https://www.who.int/emergencies/diseases/novel-  
815 coronavirus-2019/events-as-they-happen](https://www.who.int/emergencies/diseases/novel-<br/>815 coronavirus-2019/events-as-they-happen) (Accessed 20/5/2020)

- 816 Woodside, A.G. (2013). Moving beyond multiple regression analysis to algorithms:  
817 Calling for adoption of a paradigm shift from symmetric to asymmetric thinking in  
818 data analysis and crafting theory. *Journal of Business Research*, 66(4), 463-472.
- 819 Woodside, A.G. (2014). Embrace•perform•model: Complexity theory, contrarian case  
820 analysis, and multiple realities. *Journal of Business Research*, 67, 2495-2503.
- 821 Woodside, A.G., & Zhang, M. 2013. Cultural diversity and marketing transactions:  
822 Are market integration, large community size, and world religions necessary for  
823 fairness in ephemeral exchanges? *Psychology and Marketing*, 30(3), 263-276.
- 824 Worldometer (2020). Age, sex, existing conditions of COVID-19 cases and deaths.  
825 Available from: [https://www.worldometers.info/coronavirus/coronavirus-age-sex-](https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/)  
826 [demographics/](https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/) (Accessed 24/5/2020)
- 827 WTTC (2020). *Economic impact reports*. World Travel and Tourism Council.  
828 Available from: <https://wttc.org/Research/Economic-Impact> (Accessed 22/5/2020)
- 829 Wu, P.L., Yeh, S.S., Huan, T.C., & Woodside, A.G. (2014). Applying complexity  
830 theory to deepen service dominant logic: Configural analysis of customer  
831 experience-and-outcome assessments of professional services for personal  
832 transformations. *Journal of Business Research*, 67(8), 1647-1670.
- 833 Yépez, C.A. (2017). Financial intermediation, consumption dynamics, and business  
834 cycles. *Economic Modelling*, 60, 231-243.
- 835 Zahra, A., & Ryan, C. (2007). From chaos to cohesion—Complexity in tourism  
836 structures: An analysis of New Zealand’s regional tourism organizations. *Tourism*  
837 *Management*, 28(3), 854-862.
- 838 Zhai, X., Zhong, D., & Luo, Q. (2019). Turn it around in crisis communication: An  
839 ABM approach. *Annals of Tourism Research*, 79, Article in press.
- 840

841 **Table 1:** Correlation matrix

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	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1</b> Psychol. Impact	1						
<b>2</b> Economic Impact	.018	1					
<b>3</b> Recession	-.093	.044	1				
<b>4</b> Travel Risks	.030	-.054	.027	1			
<b>5</b> Destination Risks	-.029	-.142	-.118	.100	1		
<b>6</b> Hospitality Risks	.019	-.024	.000	-.079	.070	1	
<b>7</b> Holiday Intention	.084	.059	-.060	.066	.059	.013	1

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845 **Table 2:** Profile of the respondents

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	<b>N</b>	<b>%</b>
<i>Age</i>		
18-35	126	32.7
36-50	186	48.3
>50	73	19.0
<i>Income</i>		
≤1000 €	186	48.3
>1000 €	199	51.7
<i>Total</i>	385	100

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**Table 3:** Descriptive statistics

	Statements	Means	SD	Age			Income	
				18-35	36-50	>50	≤1000	>1000
<i>COVID-19 Psychological Impact</i>								
PCI1	COVID-19 has impacted my everyday life.	4.23	.797	4.17	4.40	3.88	4.39	4.08
PCI2	COVID-19 has changed my hygiene standards.	4.43	.751	4.29	4.45	4.64	4.62	4.26
PCI3	COVID-19 has made me fearful.	4.33	.792	3.96	4.47	4.59	4.46	4.20
PCI4	COVID-19 has increased my anxiety level.	4.12	.859	3.76	4.24	4.44	4.18	4.07
PCI5	COVID-19 has made me reconsider my way of life.	3.94	1.120	3.62	4.11	4.07	3.97	3.91
<i>COVID-19 Economic Impact</i>								
CEI1	COVID-19 has changed my consumption patterns.	3.59	.937	3.42	3.68	3.66	3.62	3.56
CEI2	COVID-19 has increased my job vulnerability.	3.61	1.226	3.67	3.98	2.55	3.67	3.55
CEI3	COVID-19 has substantially affected my income.	3.61	1.299	3.44	4.16	2.51	3.68	3.55
CEI4	COVID-19 will substantially affect my income during 2020.	3.77	1.284	3.66	4.28	2.67	3.84	3.71

CEI5	COVID-19 will substantially affect my income in the future.	3.83	1.189	3.60	4.25	3.15	3.96	3.71
<hr/>								
<i>Recession and COVID-19</i>								
RC1	COVID-19 will deepen the current recession.	4.42	.612	4.57	4.39	4.22	4.52	4.33
RC2	COVID-19 has affected me more than the economic crisis.	2.38	.824	2.38	2.46	2.19	2.23	2.53
RC3	COVID-19 has changed my consumption patterns more than the economic crisis has.	2.66	.968	2.76	2.62	2.60	2.58	2.75
RC4	COVID-19 has affected my job more than the economic crisis has.	2.53	1.041	2.64	2.52	2.36	2.39	2.65
RC5	Combined with the current recession, COVID-19 will be devastating for my way of life.	2.65	1.001	2.68	2.76	2.33	2.64	2.67
RC6	Combined with the current recession, COVID-19 will have devastating effects on the national economy.	4.21	.793	4.37	4.18	3.99	4.25	4.17
<hr/>								
<i>Travel Risks</i>								
TR1	I am afraid to travel due to COVID-19.	3.68	.833	3.46	3.71	3.96	3.65	3.70

TR2	I believe that mass transport is not safe due to COVID-19.	3.89	.915	3.72	3.88	4.21	3.89	3.89
TR3	I am reluctant to travel by air due to COVID-19.	3.99	.921	3.89	3.95	4.29	4.02	3.97
TR4	I am reluctant to travel by boat due to COVID-19.	3.93	.933	3.77	3.85	4.41	3.93	3.93
TR5	I am reluctant to travel by land-based means of mass transport (i.e. train; bus) due to COVID-19.	3.98	.873	3.83	3.91	4.42	3.95	4.02
<hr/>								
<i>Destination Risks</i>								
DR1	Considering COVID-19, I believe that Greece is a safe destination.	3.40	.797	3.23	3.44	3.59	3.37	3.42
DR2	Considering COVID-19, I believe that going for a holiday somewhere in Greece is safer than travelling abroad.	3.57	.896	3.41	3.55	3.92	3.54	3.61
DR3	COVID-19 will markedly affect my destination selection for holidays during 2020.	3.67	8.28	3.56	3.62	4.00	3.65	3.69
DR4	COVID-19 will markedly affect my destination selection for holidays in future years.	3.20	.912	3.05	3.24	3.36	3.16	3.24
DR5	COVID-19 will negatively affect the quality of destination	3.59	.917	3.47	3.61	3.77	3.58	3.61

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products and services.

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*Hospitality Risks*

HR1	I would be reluctant to sit and eat in a restaurant due to COVID-19.	3.61	.865	3.56	3.57	3.82	3.57	3.65
HR2	I would be reluctant to sit in a café/bar due to COVID-19.	3.49	.966	3.43	3.44	3.74	3.44	3.54
HR3	Due to COVID-19, during my holidays I would prefer to prepare my own food (meals; drinks etc.)	3.85	.944	3.80	3.82	3.99	3.81	3.88
HR4	I would be afraid to stay in accommodation I had paid for due to COVID-19.	4.02	.963	3.95	4.01	4.16	4.01	4.03
HR5	Due to COVID-19, during my holidays I would prefer to stay in a house that I own.	3.65	1.012	3.59	3.61	3.88	3.62	3.68
HR6	Due to COVID-19, during my holidays I would prefer to stay in a house that my friends/relatives own.	3.47	1.028	3.45	3.46	3.52	3.42	3.51

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*Holiday Intention*

HI1	COVID-19 will affect my decision whether to go for	3.25	.913	2.79	3.42	3.60	3.25	3.25
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	holidays in 2020.							
HI2	COVID-19 will affect my decision whether to go for holidays in future years.	3.06	.978	2.67	3.22	3.36	3.06	3.07
HI3	Due to COVID-19 I would prefer to go for holidays somewhere in Greece rather than abroad.	3.53	1.070	3.23	3.65	3.74	3.55	3.51
HI4	COVID-19 has had a greater impact upon my holiday intention than the recession.	3.30	.897	2.99	3.47	3.38	3.36	3.24
HI5	I intend to go for holidays during 2020.	3.70	1.039	3.38	3.86	3.86	3.65	3.76

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**Table 4:** Rotated matrix loadings and Cronbach's A

	<b>Loadings</b>	<b>Cronbach's A</b>
<i>COVID-19 Psychol. Impact</i>		.850
PCI1	.831	
PCI2	.823	
PCI3	.904	
PCI4	.801	
PCI5	.654	
<i>COVID-19 Economic Impact</i>		.902
CEI1	.538	
CEI2	.886	
CEI3	.944	
CEI4	.933	
CEI5	.852	
<i>Recession and COVID-19</i>		.863
RC1	LC	
RC2	.866	
RC3	.909	
RC4	.864	
RC5	.727	
RC6	LC	
<i>Travel Risks</i>		.947
TR1	.815	
TR2	.933	
TR3	.950	

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TR4	.937	
TR5	.888	
<hr/>		
<i>Destination Risks</i>		.913
DR1	.934	
DR2	.908	
DR3	.832	
DR4	.806	
DR5	.807	
<hr/>		
<i>Hospitality Risks</i>		.918
HR1	.903	
HR2	.908	
HR3	.845	
HR4	.770	
HR5	.876	
HR6	.754	
<hr/>		
<i>Holiday Intention</i>		.913
HI1	.935	
HI2	.836	
HI3	.879	
HI4	.850	
HI5	.805	

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LC: Eliminated due to low commonality (<.4)

**Table 5:** Complex solutions for COVID-19

Complex Solution	Raw Coverage	Unique Coverage	Consistency
Model: $f_{hi}=f(f_a,f_i,f_{pci},f_{cei},f_{rc},f_{tr},f_{dr},f_{hr})$			
$f_a,\sim f_i,\sim f_{pci},\sim f_{cei},\sim f_{rc},f_{tr},f_{dr},f_{hr}$	.42863	.12278	.84921
$f_a,f_i,f_{pci},f_{cei},\sim f_{rc},\sim f_{tr},\sim f_{dr},\sim f_{hr}$	.41382	.11730	.82084
$\sim f_a,f_i,f_{pci},f_{cei},f_{rc},\sim f_{tr},\sim f_{dr},\sim f_{hr}$	.46924	.13012	.80827
<i>Solution Coverage: .43556</i>	<i>Solution Consistency: .82375</i>		

f\_a: Age

f\_i: income

f\_tr: Travel Risks

f\_pci: COVID-19

f\_cei: COVID-19

f\_rc: Recession and

Psychological Impact

Economic Impact

COVID-19

f\_dr: Destination Risks

f\_hr: Hospitality Risks

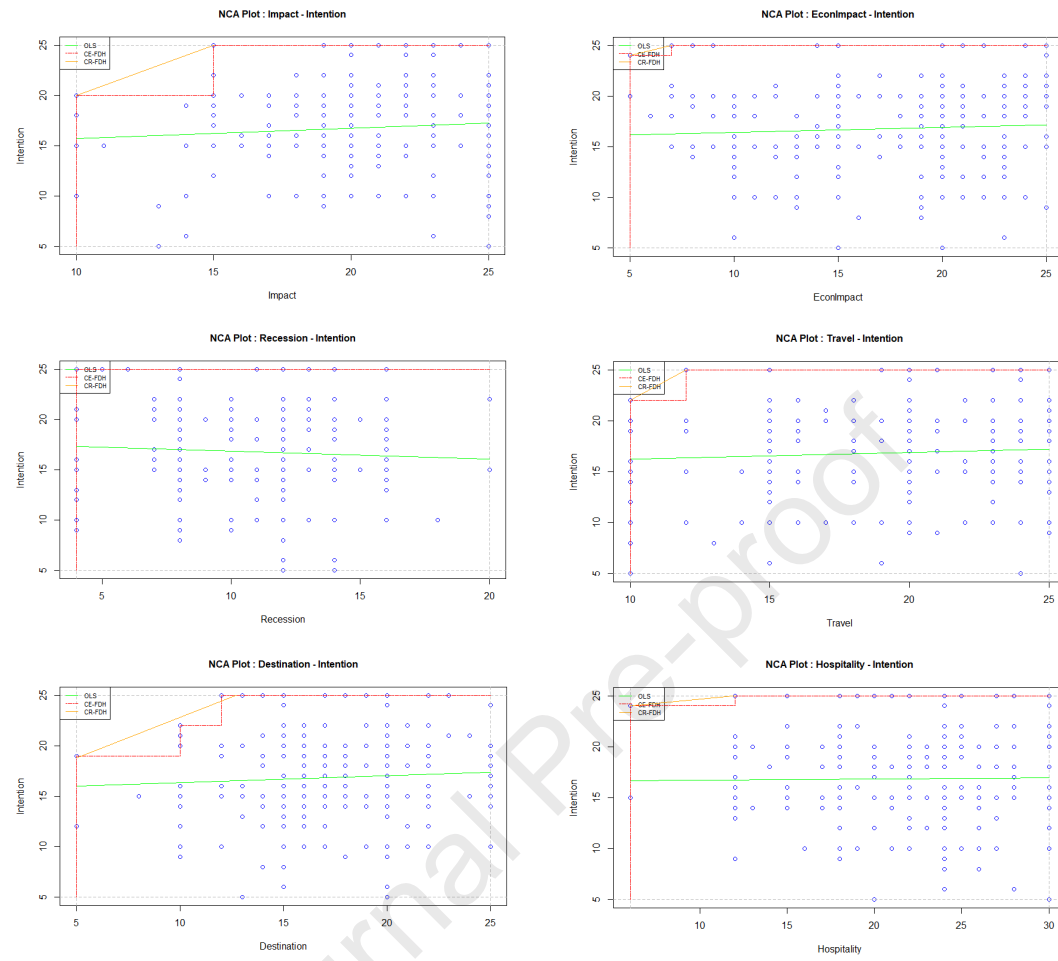
f\_hi: Holiday Intention



**Table 6:** Size effect

		<b>ce_fdh</b>	<b>cr_fdh</b>
1	Psychological Impact – Intention	.083	.042
2	Economic Impact – Intention	.005	.002
3	Recession – Intention	.000	.000
4	Travel Risks – Intention	.020	.010
5	Destination Risks – Intention	.090	.060
6	Hospitality Risks – Intention	.012	.006

Figure 1: NCA plots



**Author photo**



**Biographical note**

Nikolaos Pappas is Associate Professor in Tourism, Hospitality and Events, and the Director of the Centre for Research in Tourism Excellence (CERTE) at the University of Sunderland, UK. He holds a doctorate (PhD) in tourism development and a post-doctorate (PDoc) in risk and crisis management. He has worked more than 20 years in the tourism and hospitality industry, and since 2001 he is an academic in Greek and UK universities. He has numerous publications in esteemed scientific journals and conferences, and acts as a reviewer in several journals. His research interests include crisis management communications, and tourism and hospitality management.

## **Impact Statement**

This study examines the impact of COVID19 upon the holiday intention of the residents of Athens, people living in a country that has successfully managed to minimize the impact of the pandemic, but has been battling with an economic crisis for more than a decade. The theoretical contribution of the study is a better understanding of the formulation of holiday intention during a COVID19 nationwide lockdown. Methodologically, its contribution is twofold. First, it examines the complexity of holiday intentions by using fuzzy-set Qualitative Comparative Analysis, a method that has only recently been employed in the travel and tourism domain. Second, it progresses to a complementary analysis of the size effects of the examined conditions by using Necessary Condition Analysis, a new method (to the best of the author's knowledge) in tourism. The article also identifies and discusses several managerial implications related to the research results.