

Revisiting destination competitiveness through chaos theory: The butterfly competitiveness model

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Abstract

The second decade of this century has been characterized by a particular emphasis on the significance of safety and security in human life in general and in tourist decision-making in particular. This study is therefore a timely overview of the impacts of the COVID-19 pandemic on various parts of the travel and tourism industry across the globe. Specifically, this study revisits the subject of destination competitiveness by introducing possible new actors and paradigms through the concepts of *chaos theory* and the *butterfly effect*. The study proposes a model, called the butterfly competitiveness model, to capture the edge of chaos of the tourism industry, the butterfly effects of COVID-19, cosmology, bifurcation events and behaviors, and health and safety-driven self-organization for destination competitiveness. It also clarifies the role of governments and health authorities as strange attractors in self-organization.

Keywords: destination competitiveness; chaos theory; butterfly effect; health and safety; strategic alliances; smart technology.

Introduction

Like other major economic sectors, tourism has become a significant player in many national economies. Since early this century, destinations, as a single product, have become central to the fierce competition in international tourism to attract more visitors and increase revenues (e.g., Buhalis, 2000; Dwyer & Kim, 2003; Heath, 2003; Kozak, 2004; Ritchie & Crouch, 2003). The development of destination competitiveness and the ability to maintain market share depends on adaptation as well as resilience to today's changing demand structure and global conditions. For many years, the use of tourism resources and the protection of their unique features and attractiveness have been among the primary factors in maintaining the power of competitiveness (Kozak & Rimmington, 1999; Vanhove, 2006). In the last two decades, with the combination of facilities, nature, and culture, destinations have also created specific brands that reflect their own identities and differentiate them from their peers (Flagestad & Hope, 2001; Morgan, Pritchard, & Pride, 2011; Pike, 2004; Tasci & Kozak, 2006). As a consequence, tour operators and the media emphasize destinations as a single and unique product separate from individual business operators or facilities (Avraham & Ketter, 2016). This creates, directly or indirectly, a league table of destination competitiveness at the national and international levels.

As such, the future of the tourism and travel industry is expected to be dependent on the existence of destinations that offer a much broader range of facilities and services to enrich the quality of visitor experience (Kozak & Baloglu, 2011). Today, due to recent developments, health safety appears to be an additional important element of these facilities and services. On the demand side, generally speaking, the world market has left behind the classical product approach to become more customer-oriented, with a specific focus on the maximization of customer experience (Pine & Gilmore, 1998, 1999). During a destination experience, visitors have no single purpose, such as lying on the beach; they prefer to get to

48 know the location in a broader sense, seeing new places, gaining new experiences, and
49 spending more time on outdoor activities (Crompton, 1979; Mayo & Jarvis, 1981; Yoon &
50 Uysal, 2005).

51 An extensive review of the literature by Cronjé and du Plessis (2020) indicates that
52 destination competitiveness, as an academic subject, has attracted much interest in the field of
53 tourism research over the last two decades. Such studies have considered destination
54 competitiveness from the demand side (e.g., number of tourists, tourism expenditures,
55 distance traveled, and number of nights spent) and/or from the supply side (e.g., attractions,
56 facilities, climate, services, and prices). Safety and security have been considered among the
57 top factors on the supply side (e.g. Gómez-Vega & Picazo-Tadeo, 2019; Ritchie & Crouch,
58 2003; Luštický & Štumpf, 2021). Studies have also considered competitiveness from the
59 management and/or marketing perspectives, focusing on how to improve the quality and
60 variety of products and services at the destination (e.g. Gomezelj & Mihalic, 2008; Gürsoy,
61 Baloglu, & Chi, 2009; Kozak & Baloglu, 2011; Ritchie & Crouch, 2003). As such,
62 understanding visitors' perceptions of supply-side factors or the opinions of tourism experts
63 has to date been central to measuring the competitiveness of destinations. However, in an
64 extensive network analysis regarding definitions of tourism competitiveness, Aguiar-Barbosa,
65 Chim-Miki and Kozak (2021) observed that the literature has neglected the question of how
66 extreme health situations can force the transformation of some of the familiar paradigms and
67 principles, resulting in new actors in the complex phenomenon of destination competitiveness.

68 The COVID-19 pandemic is one of the most recent developments to impact on
69 tourism supply and demand. First found in the People's Republic of China in late 2019, it
70 spread rapidly across the world, affecting 215 countries. Various predictions have been made
71 regarding the likely impacts of COVID-19 on the current dynamics of the tourism system. For
72 instance, Wen, Kozak, Yang, and Liu (2021) suggested that the tourism industry will face
73 changes in tourist behavior, risk management, service delivery, transportation patterns,
74 distribution channels, and travel patterns. According to these authors, such developments will
75 speed up the implementation of smart tourism within destinations by minimizing crowding
76 and encouraging more efficient time-planning practices. The necessity of social distancing,
77 even on vacation, will surely encourage tourism authorities to prioritize their visitors'
78 concerns about traveling safely to their destinations (He, Liu, & Li, 2021; Jongho, Kim, &
79 Choeh, 2021).

80 In line with the current developments relating to the issue of health safety and its
81 major impacts worldwide, this study starts with an elaboration of chaos theory in the context
82 of the massive negative impact of COVID-19 on the sustained performance of destinations.
83 As has recently become apparent, either as individuals or as businesses, we occasionally face
84 unpredictable situations that result in varying degrees of impact on the system. In such cases,
85 chaos theory, proposed by Lorenz (1963), tries to understand how simple systems may change
86 in sudden, unexpected, or irregular ways (Warren, 2021). Lorenz illustrated this theory with
87 the butterfly effect, showing how a minor change in one place may create turbulence in a
88 long-distance space. The related literature suggests that chaos theory may help the tourism
89 industry to establish crisis management strategies. For instance, Speakman and Sharpley
90 (2012) emphasized how Mexico benefited from the application of chaos theory in responding
91 to the influenza A (H1N1) crisis almost a decade ago.

92 As a consequence, the present study revisits the subject of destination competitiveness
93 by introducing possible new actors and paradigms in terms of chaos theory and the butterfly
94 effect. The study proposes a model, the butterfly competitiveness model, to capture the edge
95 of chaos in the tourism industry, the butterfly effects of COVID-19, cosmology, bifurcation
96 events and behaviors of tourism destinations, and health and safety-driven self-organization

97 for destination competitiveness. It also clarifies the role of governments and health authorities
 98 as strange attractors of self-organization in what is referred to as the “new normal.”

99 **Chaos theory**

100 Chaos theory covers a set of “loosely related theoretical and meta-theoretical orientations to
 101 the behavior of complex non-linear systems” (Seeger, 2002, p. 239). It is concerned with the
 102 existence of unpredictable, non-linear relationships and complex elements of systems. The
 103 theory suggests that non-linear and complex systems can self-organize, transform, and renew
 104 themselves (Seeger, 2002) and, more importantly, that as a result of this transformation they
 105 can demonstrate stability, structure, and order (Murphy, 1996; Seeger, 2002). As Levy put it,
 106 “it is the promise of finding a fundamental order and structure behind complex events that
 107 probably explains the great interest chaos theory has generated in so many fields” (1994,
 108 p. 169). Chaos theory signals several important paradigms that can be used as a theoretical
 109 lens to understand and explain the implications of COVID-19 for the tourism industry, with
 110 particular reference to destination governance and competitiveness.

111 Edge of chaos is one of the underlying principles of chaos theory. It suggests that
 112 systems can be unstable and that changes are inevitable. Systems may enjoy a period of
 113 stability or equilibrium, but there is always a possibility of disruption that could lead them to
 114 the edge of chaos, resulting in crises of different forms. Devastating impacts of the COVID-
 115 19 pandemic, such as travel restrictions and quarantine for international travelers have
 116 generated a chaotic system, resulting in the need to re-establish stability and order in a tourist
 117 destination. Destinations use online marketing strategies to promote their goods and products
 118 to target groups and offer an “untact service” that takes account of social distancing
 119 requirements (Khoa et al., 2021). In addition, as noted by Arici and Altinay (2021), it is time
 120 to redesign hospitality marketing structures and strategies in a format that is more applicable
 121 in the post-pandemic world. Seeger (2002) calls this the butterfly effect, explaining it in terms
 122 of one event initiating a set of events that lead to a major, and in many cases uncontrollable,
 123 crisis. It is indeed the case that COVID-19 acted as a trigger event leading to a series of events
 124 that brought the tourism industry to the edge of chaos.

125 Destinations therefore strive to respond to series of events (such as the implications of
 126 COVID-19), for instance by adapting to the growing importance of health and safety in
 127 maintaining the psychological and physiological comfort of visitors, and by acknowledging
 128 the importance of technology in delivering services and products in a protected, risk-averse
 129 environment. However, as Levy (1994) noted chaotic systems create uncertainty and long-
 130 term planning is almost impossible. Flexibility and adaptiveness are therefore essential for
 131 organizations to survive. It is important to note that tourism destinations are adapting their
 132 strategies and practices on almost a daily basis, because they are still learning about the
 133 implications of COVID-19, including the changing nature of the virus, changing travel
 134 restrictions, and, more importantly, changing positions of regional and central governments
 135 with regard to health and safety measures.

136 The other underlying principle of chaos theory is twofold: bifurcation and cosmology.
 137 Bifurcation is concerned with “the flashpoints of change where a system’s direction,
 138 character, and/or structure are fundamentally disrupted by crisis events and behaviors are
 139 often described in chaos theory as these points of system bifurcation” (Sellnow, Seeger, &
 140 Ulmer, 2002, p. 271). We can see much evidence of bifurcation in the tourism industry as a
 141 result of COVID-19, including the changing nature of the tourist experience, the
 142 transformation of destination management and competitiveness, the evolving roles of different
 143 stakeholder groups in the global tourism industry, developments in managers’ perceptions and
 144 handling of different forms of risks, and the increasing importance of cross-country, regional,
 145 and global collaboration. All of these factors demonstrate a new direction, character, and

146 structure for the tourism system (Zhang & Blasco, 2021). More specifically, the “untact
 147 service” style that takes account of social distancing requirements of the new normal can be
 148 given as an example (Ali et al., 2021; Finsterwalder, 2021; Khoa et al., 2021). This minimizes
 149 face-to-face contact as a self-preventive attitude to risk and safety, including technology-
 150 based and non-digitalized “untact” behaviors used for health protection objectives consisting
 151 of camping or hiking, and personalized special services such as room service or special family
 152 dining rooms (Bae & Chang, 2021).

153
 154 A cosmology occurs when people realize that the world and the environment in which
 155 they live are no longer rational and orderly. There is usually a widespread belief among
 156 people that “both the sense of what is occurring and the means to rebuild that sense collapse
 157 together” (Weick, 1993, p. 634). Indeed, COVID-19 cosmology now exists because there is
 158 ongoing investigation into the cause of the virus and how it spreads, evolves, and mutates.
 159 There are also growing concerns among the public that the world of travel will never be the
 160 same again. Therefore, today’s COVID-19 world is a new normal (Gössling, Scott, & Hall,
 161 2021; Sigala, 2020; Wen et al., 2021) that will eventually lead to novel and innovative ways
 162 of producing and delivering tourism products and services, new ways of competing as
 163 destinations, and creative ways of governing tourism destinations (Gurlek & Koseoglu, 2021).
 164 New generation technologies, including artificial intelligence (AI), service robotics, and smart
 165 devices in promoting and managing tourist destinations can be given as examples for
 166 cosmology in the post-pandemic world. AI can also be a useful tool to monitor, gather
 167 information, and control, evaluate and execute energy consumption in destinations
 168 (Maximpact, 2021). In the new normal, these technologies can also be utilized to enhance
 169 energy efficiency in tourist destinations (Chen et al., 2021).

170 The third principle that deserves attention concerns self-organization and strange
 171 attractors. Self-organization is a “natural process whereby order re-emerges out of a random
 172 chaotic state” (Stewart, 1989, cited in Sellnow et al., 2002, p. 272). Sellnow et al. (2002)
 173 further explained that “through self-organization, new forms, structures, procedures,
 174 hierarchies, and understanding emerge, giving a new form to the system, often at a higher
 175 level of order and complexity” (p. 272). It is indeed the case that current COVID-19-related
 176 tourism and hospitality publications predict a radical transformation of the tourism industry
 177 with clear implications for the travel experience (Sigala, 2020), the design and delivery of
 178 tourist products and services (Hameed, Mahomed, & Carvalho, 2020), the management of the
 179 booking and consumption experience (Wen et al., 2021), the hosting of travelers (Kour,
 180 Jasrotia, & Gupta, 2020), the management and governance of destinations (Zhang & Blasco,
 181 2021), and, perhaps more importantly, for achieving and sustaining competitiveness in the
 182 tourism and hospitality industry (Karabulut, Bilgin, Demir, & Doker, 2020; Pavlatos,
 183 Kostakis, & Digkas, 2021). For example, as a reaction to the pandemic, Israel has vaccinated
 184 its entire population in order to decrease health and safety concerns of international travelers.
 185 The Greek government, on the other hand, has followed a vaccination policy aiming to create
 186 “COVID-19 free” tourist islands and destinations.

187 Bifurcation and self-organization move the benchmark of good practice in line with
 188 the new normal and force systems (including destinations and organizations) to improve
 189 (Speakman & Sharpley, 2012). The concept of strange attractor points to techniques which
 190 may encourage stability, rational thinking, and order from chaos. Sellnow et al. (2002)
 191 defined strange attractors as values, needs, and assumptions that guide a social system toward
 192 relative stability following bifurcation. Similarly, Zahra and Ryan described them as
 193 providing a “common vision, sense of meaning, strategy or value system that drives people to
 194 achieve common goal” (2007, p. 855). In the case of COVID-19, protecting the health and
 195 safety of travelers and host communities has become the top priority of destinations and

196 policymakers, and concern for health and safety has become the core value that cuts across
 197 and underpins global, regional, and national tourism strategies and policies. Protecting the
 198 health and safety of travelers and citizens is the key principle of the new normal, forcing
 199 destinations to look for and establish their own “normality” within new paradigms. The result
 200 is the growing importance of new stakeholders, governments, and health authorities: strange
 201 attractors who strive to bring order from chaos and thus create the conditions for a new order
 202 to evolve.

203 The abovementioned principles of chaos theory (edge of chaos, the butterfly effect,
 204 bifurcation and cosmology, self-organization, and strange attractors) can help us to understand
 205 how COVID-19 has pushed the tourism industry to the edge of chaos, how the tourism
 206 industry is changing as a result of COVID-19, how the industry can self-organize with new
 207 norms, and what role strange attractors might play in the process of transforming the entire
 208 system to the new normal (see Figure 1). The next section of this study makes a modest
 209 attempt to understand the implications of COVID-19 for the global tourism industry and to
 210 evaluate the transformation of the industry through the principles of chaos theory.

211 ----- Insert Figure 1 here -----
 212

214 **Edge of chaos: Shifts in tourist behavior and post-pandemic destination competitiveness**

215 COVID-19 provides the best example to date of the butterfly effect, as nothing has remained
 216 unaffected, either positively or negatively. The pandemic has adversely affected the economic
 217 structure of many countries, as well as their daily lifestyle, and continues to do so. Just as
 218 individuals have had to postpone or abandon their vacation plans, adjust their diet, or change
 219 their work patterns, so businesses have had to adapt in order to survive. In particular, future
 220 visitors to destinations are expected to be more independent (e.g., planning their own trips),
 221 more experienced (e.g., traveling more but with shorter lengths of stay), more nature-oriented
 222 (e.g., preferring quieter locations), and more informal (e.g., having freedom to act in the
 223 direction of own choice). They are likely to prefer small-scale informal facilities for overnight
 224 stays, avoiding densely populated areas and using individual vehicles to travel (Wen et al.,
 225 2021).

226 There is also an anticipation that economic and epidemic risks will continue to have an
 227 impact on people’s medium- and long-term travel plans, even if there is a recovery in the
 228 short term. Still, it is important to note that varying types of visitor behavior and choice may
 229 appear due to the influence of internal or external factors such as culture, age, income, price,
 230 and personality. Considering Plog’s typology of personality (1974, 2001) or Hofstede’s
 231 cultural traits (1980), people with either psychographic or allocentric personality or who
 232 represent different cultural traits (e.g., uncertainty avoidance, masculine) may like to
 233 participate in varying forms of tourism activities for adventure, well-being, or self-
 234 actualization purposes. Such practices may introduce market segmentation which eventually
 235 helps to maintain the competitiveness of destinations.

236 In the tourism context, the way the destination system works has changed or is about
 237 to change. The change may create a chaotic system that leads, directly or indirectly, to the re-
 238 establishment of stability and order in the distribution, management, or service delivery
 239 systems (e.g., through the application of online selling and cost-reduction strategies, or the
 240 delivery of restricted services due to social distancing; Hameed et al. 2020; Pavlatos et al.,
 241 2021). The COVID-19 pandemic appears to be the mediating factor of this second wave that
 242 is establishing new regulations and practices to maintain the safety and security of customers,
 243 allowing them to be more self-confident and risk-free on a vacation (e.g., Ivanova, Ivanov, &
 244 Ivanov, 2021; Wen et al., 2021). One clear way to make this happen is by launching more

245 effective management of tourist destinations. Even if destinations' missions remain similar,
 246 their functions are highly likely to be adjusted in line with the changing needs on the demand
 247 side and the new operations and practices on the supply side, including those of hoteliers,
 248 retailers, and local authorities.

249 Until now, as noted above, a destination's competitiveness related mainly to the
 250 performance of its natural, cultural, social, and economic resources (Kozak & Rimmington,
 251 1998; Vanhove, 2006). When something was wrong with any one of these elements, the
 252 negative outcome would be reflected back on the other elements and tourists would not want
 253 to come back. The local community's quality of life would be negatively affected by poor
 254 service standards, and they would earn less from the tourism industry. Employees would fear
 255 the loss of their jobs, resulting in reduced job satisfaction. Suppliers would earn less. Most
 256 importantly, a withdrawal of potential customers would have a negative effect on all the
 257 cultural, economic, and physical resources, as there would be less capital for reinvestment.

258 However, the situation has changed. Since COVID-19, it appears that health safety
 259 and security have become the only drivers of the performance of destinations. Their
 260 disappearance has had an immense impact on all parties, including locals, visitors, and
 261 employees, even in cases where there has been a positive impact on natural resources. More
 262 specifically, in the wake of COVID-19 the future of tourism is likely to depend on how
 263 destinations can become easily accessible as a product and as a location, and how they can be
 264 reorganized to integrate their attractions with health facilities and services of improved
 265 quality. Achieving this may depend on the quality of the services and on giving priority to
 266 health safety and security as the most significant elements in maintaining comfort for visitors
 267 at today's holiday experiences.

268 **Cosmology: Growing health and safety concerns**

269 Mobility and travel have always been affected by health risks (e.g., Hassan & Soliman, 2020;
 270 Sánchez-Cañizares, Cabeza-Ramírez, Muñoz-Fernández, & Fuentes-García, 2020; Zhu &
 271 Deng, 2020). In particular, epidemics and pandemics have a severe and enduring influence on
 272 risk perceptions and travel decisions (Kozak, Crotts, & Law, 2007; Mertzanis &
 273 Papastathopoulos, 2021; Zenker & Kock, 2020). Overseas travel and visits to exotic
 274 destinations have been affected by travelers' health and safety-based perceptions of risk in
 275 connection with public transport, poorly sanitized beaches, toilets, and restaurants, or
 276 interactions with other people (Zenker, Braun, & Gyimóthy, 2021). People are therefore
 277 increasingly deterred from travel by the risk of contracting disease (Ivanova et al., 2021; Joo,
 278 Henry, Lee, Berro, & Maskery, 2019).

279 In the wake of the COVID-19 pandemic, travelers are anxious about going to crowded
 280 destinations (Wen et al., 2021); they take precautionary measures before traveling (Ivanova et
 281 al., 2021); they worry about the risk to themselves and their immediate family members if
 282 they travel (Haque & Haque, 2018); and they may not feel safe because of COVID-19
 283 (Ivanova et al., 2021; Naumov, Varadzhakova, & Naydenov, 2020). More importantly, with
 284 new variants of COVID-19 emerging globally, travelers continue to feel anxious even if the
 285 preconditions of "safe travel" (i.e., having been vaccinated) are met (Gursoy et al., 2021).

286 With COVID-19, risks seem destined to remain a major managerial and destination
 287 concern for the foreseeable future, and the overall effectiveness of tourism destinations and
 288 organizations depends to a great extent on the actions of policymakers and managers (Haque
 289 & Haque, 2018; Zhang & Blasco, 2021). Accurate perception of inherent risk in the
 290 environment by policymakers and managers has therefore become a vitally important aspect
 291 of the strategic planning and management process (Pavlatos et al., 2021). Indeed, given the
 292 association of COVID-19 with economic recession, concerns about risk in relation to health,
 293 political, economic, and social conditions are intensifying (Chen, Demir, García-Gómez, &

294 Zaremba, 2021). Hao, Xiao, and Chon (2021) have argued that we can no longer talk about
 295 crisis management; instead, tourism organizations, and tourism service providers in particular,
 296 should adopt a “disaster management approach” that involves multiple businesses and
 297 multiple channels, product design and investment preferences, digital and intelligent
 298 transformation, and market reshuffles.

299 **Bifurcation**

300 *Technology and digitalization of the tourist experience*

301 The emergence of smart technologies early this century opened the door to the development
 302 of smart destinations offering digitalized services to their visitors (e.g., Belanche et al., 2020;
 303 Del Chiappa & Baggio, 2015; Kontogianni & Alepis, 2020; Wang, Li, & Li, 2013). This
 304 process is likely to speed up, since the technology-disabled proportion of the world’s
 305 population has largely been forced to catch up with information technologies in response to
 306 the pandemic (Gretzel et al., 2020). As a result, smart destinations can influence, directly or
 307 indirectly, the quality and network of supply and demand, which is a major prerequisite of
 308 competitive advantage (Del Chiappa & Baggio, 2015; Ivars-Baidal, Celdrán-Bernabeu,
 309 Femenia-Serra, Perles-Ribes, & Giner-Sánchez, 2021).

310 As suggested in the literature (e.g., Kontogianni & Alepis, 2020; Sigala, 2020), such
 311 applications include augmented reality (e.g., in museums), contactless services (e.g., for
 312 boarding transport and making reservations), machine learning (e.g., for marketing and
 313 publicizing facilities and services in light of what visitors need and search for, either in
 314 advance or onsite at the destination), robots (e.g., where social distancing is the top priority,
 315 either indoors or outdoors at the destination), and the Internet of Things (e.g., for monitoring
 316 which attractions at the destination are riskier, and therefore less attractive). As data from
 317 these applications can be stored, customer relationship management based on personalized
 318 data can offer advantages for both the supply and demand sides, improving the performance
 319 of destinations for a higher degree of destination competitiveness.

320 As such, the outcome of all these practices will be an enrichment of the visitor
 321 experience (Kontogianni & Alepis, 2020; Tussyadiah & Zach, 2012; Wang, Li, & Li, 2013),
 322 as well as a transfer of knowledge and networks among shareholders (Del Chiappa & Baggio,
 323 2015; Ivars-Baidal et al., 2021). All these are the drivers of destination competitiveness. As a
 324 result, scholars are increasingly suggesting that, with the support of smart applications, the
 325 tourism experience will be more digitalized and more shared, reminiscent of the pre-COVID-
 326 19 predictions of more collaborative tourism consumption. By increasing the mobility of
 327 potential tourists, technology has also provided easy access to destinations, in either the short
 328 or the long term. The provision of proactive health and safety-centered services for
 329 identifying early signals through smart technology, within a single destination or across a
 330 number of destinations, can also create an advantage for the destinations that participate in the
 331 system. These developments emphasize the importance of strategic thinking in creating
 332 positive tourist experiences and the importance of cross-border marketing or complementary
 333 product designs for destinations (e.g., Kozak & Buhalis, 2019).

334 *Risk management*

335 In 1928, Shedd explained why life is full of risks: “A ship in harbor is safe, but that is not
 336 what ships are built for.” This means that even if people are safe in their own locations, they
 337 must walk, run, fall, and get up again to reach the final destination in their lives. Such a long
 338 and risky journey involves fewer or greater risks depending on the time, location, conditions,
 339 and environment. As widely indicated in the literature (e.g., Fuchs & Reichel, 2011; Kozak et
 340 al., 2007; Ritchie & Jiang, 2019; Sonmez, Backman, & Allen, 1994; Tse, So, & Sin, 2006),
 341 this is how the tourism industry has survived for many decades, regardless of the type or the

342 scale of crises occurring as a result of disease, natural disaster, political turmoil, economic
343 corruption, or terrorism.

344 Until two decades ago, the tourism literature considered the issue of risk management
345 mostly from the local perspective, assuming that crises may occur specifically in certain
346 destinations. For instance, Sonmez et al. (1994) suggested that a crisis is likely to threaten a
347 destination's overall reputation for safety, attractiveness, and comfort on the demand side.
348 However, since early this century, the context of risk management has become more
349 international and intensive, because new forms of disasters, in particular terrorism (e.g., the
350 9/11 attacks, regional disputes), natural disasters (e.g., earthquakes, floods), and human-
351 induced disasters (e.g., SARS, MERS, Ebola, COVID-19), have influenced people's comfort
352 at the global level.

353 As a consequence, there has been a broadening of the literature to consider different
354 forms of risk-reduction strategies, including information search about the destination before
355 starting out on the journey (e.g., Fuchs & Reichel, 2005, 2011). Visitors may pay more
356 attention to the outcome of an information search signaling alternatives that make visitors feel
357 safer and pose fewer health risks. At this stage, visitors may prefer alternatives that have
358 received positive coverage from the media, tour operators, or travel agencies trying to
359 generate and distribute realistic and up-to-date information. Such information will help
360 visitors to complete the purchase of trips in a shorter time without resorting to detailed
361 information search.

362 It is therefore important for tourism organizations and destinations to investigate and
363 analyze in advance the factors that influence and motivate the direction of tourism travel flow
364 and investment in a country's environment. The risk of involvement in countries with varying
365 social, political, health and safety, and security conditions can only be minimized by carrying
366 out this organizational activity. We can therefore argue that reactive approaches to risk
367 management have become redundant. Tourism destinations and organizations need to move
368 toward a more proactive approach to crisis management and to become more
369 transformational.

370 In support of this view, Paraskevas and Altinay (2013) argued that, given their high
371 interconnectivity with all aspects of society, including political, economic, social,
372 technological, and environmental aspects, tourism destinations and organizations are
373 particularly vulnerable to crises and are affected by every possible type of disruption.
374 Therefore, a proactive approach to risk or crisis management should involve crisis signal
375 detection that consists of signal scanning, capture, and transmission to the crisis response
376 center embedded within the tourism ecosystem. For instance, new tourism product design
377 should allow customers to maintain a healthy and balanced lifestyle, ensure social distancing,
378 and reduce close contact.

379 Digital and intelligent transformation will involve offering contactless services
380 supported by digital platforms, smart services, and intelligent technology. In addition, Huang
381 and Jahromi (2021) argued that resilience-building by tourism organizations has become
382 essential. This involves collecting and disseminating market intelligence in response to
383 changing market demands during and after a crisis; developing resilience in procurement and
384 distribution systems and visibility in supply chains, which may help tourism destinations and
385 organizations to respond promptly and adaptively to supply chain disruptions; and seeking
386 partnerships to strengthen one's market position during and after a crisis, such as cross-
387 country collaborations and gaining a competitive advantage by addressing an identified
388 market demand with new technology during and after a crisis.

389 In order to handle the current crisis, albeit partially, countries including Turkey,
390 France, Italy, Spain, and Portugal have provided support packages for their national tourism
391 industries. In order to create a positive image and show that the required safety measures are

392 being taken, countries have also implemented various procedures and items of legislation. For
 393 instance, Turkey has created and implemented a system of “safe tourism certification,” that
 394 documents all the measures that hoteliers must adopt to maintain appropriate standards of
 395 hygiene and sanitation from check-in until check-out. The system particularly emphasizes
 396 how social distancing can be maintained between employees and customers and among
 397 customers, which is particularly important for elderly customers and family groups. This
 398 response has helped the national tourism industry to win the confidence of international
 399 visitors and is an important factor in their choice of Turkey as a destination.

400 *Strategic alliances in destination competitiveness*

401 The scope of international strategy is broad and involves not only international organizations
 402 but also different nations, destinations, and countries. Researchers such as Porter (1990) and
 403 Dunning (1988) have suggested that international strategy is a function of the competitive
 404 advantage of multinational operations and the comparative advantage of the nations in which
 405 they are located. International organizations operate in different national markets where they
 406 can exploit national comparative advantages to reinforce their own competitive advantages or
 407 counterbalance their own competitive weaknesses. They therefore search continuously for
 408 generic competitive strategies that can help them to achieve their aim (Porter, 1980).

409 Buckley and Casson (1998) observed that to cope with volatility, strategies have to be
 410 flexible (i.e., able to reallocate resources quickly and smoothly in response to change). It is
 411 argued that flexibility has a number of implications for the external environment of the
 412 organization, its boundaries, and its internal organization. With regard to the external
 413 environment, external flexibility enhances national competitiveness. More specifically,
 414 countries that systematically generate organizations with specific advantages are those that
 415 have a nation-specific comparative advantage. Concerning the organizations’ boundaries, in
 416 order to stay competitive, organizations should set flexible boundaries, for example by
 417 establishing networks, collaborations, and partnerships (Zhang & Blasco, 2021). The pursuit
 418 of tourism destination competitiveness has led to a number of alliances between organizations
 419 and destinations (Kozak & Buhalis, 2019).

420 In particular, organizations and destinations cooperate when it comes to joint
 421 marketing, removal of visa restrictions, free flow of people (as in the case of the European
 422 Union), joint product development and marketing, and joint transportation. The scope of these
 423 international strategies is broad and involves not only international organizations but also
 424 different nations, destinations, and countries. Researchers such as Porter (1990) and Dunning
 425 (1988) have suggested that international strategy, and more specifically destination strategy, is
 426 a function of the competitive advantage of multinational operations and the comparative
 427 advantage of the nations and destinations in which they are located. International
 428 organizations and destinations operate within different national markets where they can
 429 exploit national comparative advantages to reinforce their competitive advantage or
 430 counterbalance their competitive weakness. They therefore search continuously for generic
 431 competitive strategies that can help them to achieve their aim (Porter, 1980).

432 With the emergence of COVID-19, countries and destinations have collaborated to
 433 create safe tourism “bubbles” for citizens who wish to travel to other countries. For example,
 434 Greece, Cyprus, and Israel have sealed agreements that allow citizens with COVID-19
 435 vaccination certificates to travel without restrictions between the three countries (Mayling,
 436 2021). Similarly, the European Union has taken a collective effort among member countries
 437 and made its COVID-19 passport available for all EU citizens and residents, as well as for
 438 specific categories of travelers from third countries (Schengenvisainfonews, 2021). Through
 439 the certificate, the Commission intends to remove travel restrictions (within the European
 440 Union) such as entry bans, quarantine obligation, and testing. Destination competitiveness is

441 thus now impacted by alliances between countries in terms of health and safety collaboration
 442 and bilateral agreements. These developments render destination benchmarking more
 443 important than ever.

444 **Self-organization and strange attractors**

445 *Health and safety-driven self-organization for destination competitiveness*

446 There are no specific factors related to the determinants of destination competitiveness.
 447 Tourism competitiveness is a general concept that encompasses price differentials coupled
 448 with exchange rate movements, the productivity levels of various components of the tourism
 449 industry, and qualitative factors that affect the attractiveness or otherwise of a destination
 450 (Dwyer & Kim, 2003). The use of tourism resources and the protection of their unique
 451 features and attractiveness are among the primary factors in maintaining the power of
 452 competitiveness (Kozak & Rimmington, 1999; Vanhove, 2006). Over the last two decades,
 453 alongside the combination of facilities, nature, and culture, destinations have also created
 454 specific brands that reflect their own identities and differentiate them from their peers
 455 (Flagestad & Hope, 2001; Morgan, Pritchard, & Pride, 2011; Pike, 2004; Tasci & Kozak,
 456 2006). In this context, destination competitiveness can be defined as the ability of a
 457 destination to provide customers (tourists) with products that maximize satisfaction and are
 458 distinctive from and of a higher quality than those of other destinations—and to sustain this
 459 outcome.

460 The consumer behavior literature has identified a number of criteria that potential
 461 visitors are likely to apply in the process of deciding among a set of alternatives (Payne,
 462 Bettman, & Johnson, 1993). These include price, quality of services, availability, distance,
 463 group size, health insurance, and safety and security (Decrop & Kozak, 2009). In addition to
 464 concerns about terrorism (Chen & Noriega, 2004; Sonmez & Graefe, 1998) and food safety
 465 (MacLaurin, 2004), the fear of disease or lack of hygiene and sanitation has emerged (Lepp &
 466 Gibson, 2003; Naumov et al., 2021; Sinha & Nair, 2021; Zhang & Blasco, 2021). It therefore
 467 appears that the development of destination competitiveness and a destination's ability to
 468 maintain market share depend on its adaptation as well as its resilience to today's changing
 469 demand structure and global conditions.

470 With the emergence of COVID-19, destinations are now adapting themselves to the
 471 new normal by vaccinating their population, vaccinating their health, tourism, and hospitality
 472 employees, and improving their health infrastructures (Gursoy et al., 2021). In fact, tourism
 473 and health have become so interrelated that tourism activities are highly unlikely to restart
 474 unless certain health preconditions are met by destinations. Many proactive destinations now
 475 see health and safety-driven self-organization as a route to destination competitiveness. For
 476 example, Greece is planning to vaccinate the entire population on Greek islands in order to
 477 create COVID-free tourism destinations for international travelers. This, however, requires
 478 travelers to show their "vaccine passports" before entry. Israel, one of the few countries where
 479 the population has been widely vaccinated, sees addressing the health and safety concerns of
 480 international travelers as a source of competitive advantage not only for the tourism industry
 481 but also for the other sectors of the national economy.

482 The UK has gone one step further and is to set to outline a traffic light system central
 483 to the government's plan to open up foreign travel while preventing COVID-19 variants from
 484 finding their way into the country. The UK has introduced pilots of vaccine passports and/or
 485 before-and-after testing at nine entertainment venues commencing from mid-April 2021. It is
 486 also preparing to permit foreign holidays without quarantine to designated "green light"
 487 destinations. Countries will be assessed on factors including the proportion of the population
 488 that has been vaccinated, rates of infection, the presence of new variants, and access to
 489 reliable scientific data and genomic sequencing.

490 In addition, in the recent studies noted above, health and sanitation measures taken by
 491 destinations are key elements in the decision about specific vacations, locations, or countries
 492 (Alonso et al., 2020; Ma, Zhao, Gong, & Wengel, 2020; Naumov et al., 2020; Wen et al.,
 493 2021). Destination competitiveness would therefore require ‘health leadership’ that involves
 494 taking a proactive and systematic approach to introducing and implementing all the possible
 495 health protection measures of the host communities, travelers, employees, and hosts of
 496 tourism destinations. Health leadership would aim to reduce the health and safety anxiety
 497 among the host communities and travelers, build confidence for tourism activities and, thus,
 498 enhance the destination competitiveness. Those destinations that would like to lead the
 499 competition in new era therefore need to develop health strategies, infrastructures and
 500 practices that could create a ‘safe platform’ and support the tourism activities.

501 Prior to the COVID-19 outbreak, competitiveness obligated destinations to become
 502 leaders in their target segments by creating new techniques on the demand side (customer
 503 satisfaction, customer relationship marketing) and the supply side (quality management,
 504 experience management, human resource management). With the emergence of COVID-19,
 505 the health and safety issues cut across and underpin all these techniques. In this new context,
 506 as suggested previously (e.g., Pechlaner, Kozak, & Volgger, 2014a, 2014b), destination
 507 leadership will become an important instrument for achieving and sustaining destination
 508 competitiveness, but it will operate through the establishment of health and safety-driven self-
 509 organization. This will require the development and implementation of effective health and
 510 safety-centered marketing strategies. A perceived positive health and safety risk-free image
 511 will lead to success for destinations in accomplishing their marketing strategies. In contrast, a
 512 negative image, regardless of whether it forms part of a stereotype, may lead to an imbalance
 513 in visitor perceptions, and/or force the destination authorities to become more creative in
 514 counteracting the negative consequences.

515 Marketing strategies, campaigns and ‘image building’ exercises of destinations will
 516 require conveying confidence-building measures among the travelers (Gursoy et al., 2021;
 517 Hassan & Soliman, 2021). These should cover health and safety measures and priorities of the
 518 destinations. In fact, destinations such as Greece, Israel and Hong Kong started to develop and
 519 run health and safety-driven marketing campaigns in order to attract international travelers
 520 and also to build the ‘image’ of being safe destinations in terms of ‘health risks.’ For example,
 521 Greece has launched a new campaign aimed at promoting the country as a safe tourism
 522 destination amid the coronavirus pandemic with a reassuring message that the country
 523 complies with all the necessary health and safety protocols. More specifically, Hong Kong
 524 Airports has deployed autonomous robots equipped with both a UV light sterilizer and an air
 525 sterilizer that kill up to 99.99% of bacteria and viruses in the air and on object surfaces in just
 526 10 minutes. This innovative health protection measure and practice is being widely marketed
 527 among the international travelers.

528 It is also important to note that the competitiveness and survival of particular
 529 destinations will not be sufficient for the long-term existence of the tourism ecosystem.
 530 Destinations need to co-exist, learning from and supporting each other during crises such as
 531 the COVID-19 pandemic. They need to become competitive by using internal benchmarking
 532 (comparing their current health and safety provision to that of the past), external
 533 benchmarking (looking at other destinations to see how they handle the negative
 534 consequences of crisis scenarios), and generic benchmarking (benefiting from laws and
 535 legislations initiated by national governments or international tourism and health authorities).
 536 By looking at other destinations to understand what is missing from the market, they will be
 537 in a position to create new products that emphasize safety and security across the destination.
 538 This may improve their health and safety-driven service values, ultimately helping them to
 539 outperform other destinations.

540 Destination ‘health’ benchmarking in relation to tourism activities covers a wide range
 541 of areas including vaccinations of host communities and international travelers (including
 542 brand of vaccines – Biotech/Pfizer, Astrazeneca, Johnson and Johnson versus Sinovac – as
 543 travelling is allowed by different countries differently according to the type of vaccination),
 544 travel restrictions imposed on different countries due to COVID-19 variants, isolation at home
 545 or in hotels, and social distancing. Countries monitor each other’s COVID-19 statistics (i.e
 546 daily numbers of confirmed COVID-19 cases) as well as the health and safety measures
 547 introduced in order to prevent the ‘impacts of COVID-19 crisis on tourism industries’ by
 548 producing counter policies, strategies, and practices.

549 *Governments and health authorities as strange attractors*

550 We can use Freeman’s (1984) stakeholder theory to identify and understand the strange
 551 attractors of the COVID-19 pandemic. This theory has also been applied by tourism scholars
 552 to advance understanding of stakeholder involvement in tourism destination management
 553 (Waligo, Clarke, & Hawkins, 2014). One central purpose of stakeholder theory is to enable
 554 managers to understand the organization’s stakeholders and manage them strategically.
 555 Freeman noted that the stakeholder approach covers groups and individuals who can affect the
 556 organization, as well as managerial behaviors adopted in response to those groups and
 557 individuals. In developing appropriate response strategies, organizations and destinations need
 558 to answer three general questions about stakeholders: Who are they? (their attributes); What
 559 do they want? (their ends); How are they going to try to get it? (their means).

560 Freeman’s original definition, which is still widely used, provides insight into who
 561 these people are. He defines a stakeholder as “any group or individual who can affect or is
 562 affected by the achievement of the firm’s objectives” (1984, p. 25). Many of the answers to
 563 the question “Who are they?” have provided long lists of different forms of stakeholders (such
 564 as customers, shareholders, and employees) or a categorization scheme for stakeholders
 565 (generic versus specific, Carol, 1989; primary versus secondary, Clarkson, 1995; in the case
 566 of tourism, these lists will include tourists, governments, private sector organizations,
 567 employees, residents, special interest groups, non-governmental organizations (NGOs), local
 568 authorities and public sector organizations, and the education sector). However, the views of
 569 scholars have been influenced by resource dependence theory, which focuses on how
 570 particular social actors within an environment affect a focal organization, and which assumes
 571 that the focal organization can respond actively to these social actors (Donaldson, 1995;
 572 Nohria & Gulati, 1994; Oliver, 1991).

573 According to Pfeffer and Salancik (1978), in a resource dependence view of the firm,
 574 organizations are coalitions with varying interests that are influenced by those who control
 575 critical resources and have the attention of managers. Thus, the stakeholders that receive
 576 priority from management will be those that managers perceive as highly salient. With
 577 COVID-19, it has become evident that power and control have shifted away from tourists and
 578 toward governments and health authorities that can determine the conditions and
 579 circumstances of tourism activities. In fact, health authorities, and in many countries the
 580 health councils that advise the government, have become one of the most salient stakeholder
 581 groups in destination management (Wen et al., 2021).

582 One could also argue that blocs, such as the European Union, and vaccination
 583 coalitions, such as Israel and Greece, are increasingly salient stakeholders that proactively
 584 determine the breadth and depth of tourist flows. In short, it is the dependence of destinations
 585 on environmental actors (i.e., on external stakeholders) for health-related resources that gives
 586 those actors leverage over a destination. Destination behavior and competitiveness are
 587 therefore increasingly subject to external influence, because the destination must attend and

588 respond to the demands of the bodies that provide the health and safety resources necessary
589 for its continued survival.

590 In terms of what stakeholders want, scholars have generated numerous lists of
591 stakeholder interests. Wood (1994) suggested various categorization schemes for stakeholder
592 interests, including concrete versus symbolic, economic versus social, and local versus
593 domestic versus international. In the case of the COVID-19 pandemic's interruption of the
594 entire tourism ecosystem, health and safety and security have become the most important
595 factors influencing holiday booking decisions, decisions about mode of travel, and, more
596 importantly, the extent of adventure and flexibility in the generation or co-creation of the
597 tourism experience. Given these developments, governments, public sector organizations, and
598 private sector bodies, as well as local residents, would like to see a "health-cautious"
599 environment and infrastructure that will protect the health of visitors, service providers, and
600 local residents.

601 In terms of how stakeholders are going to try to get what they want, analyses of
602 particular types of shareholder influence have been proposed. Frooman (1999) suggested that
603 there may be more than one route of influence for a stakeholder to follow, direct or indirect
604 (via another stakeholder). Direct strategies are those where the stakeholder itself manipulates
605 the flow of resources to the firm (by withholding or using resources). Indirect strategies are
606 related to indirect action against a target organization, a notion developed in open systems
607 theories. Actors who provide resources to an organization are said to have two general means
608 of control: determining whether the organization gets the resources it needs, and determining
609 whether the organization can use the resources in the way it wants.

610 As emphasized above, safety and security have become the main concerns of almost
611 all stakeholder groups, such that the COVID-19 pandemic has led countries and governments
612 to regulate their tourism activities. For purposes of international travel, countries are likely to
613 be assessed on factors including the proportion of the population that has been vaccinated,
614 rates of infection, the presence of new variants, and access to reliable scientific data and
615 genomic sequencing. In fact, all stakeholder groups, including governments, tourists, and
616 local residents, are influencing each other directly or indirectly in order to ensure risk-free or
617 risk-minimized tourism activity. For example, China has launched a system of virus passports
618 to kickstart international travel. This has been hailed as the world's first such passport, and
619 similar schemes are also under discussion in the United States and in the European Union.
620 However, it is not yet clear how these systems could work internationally. There appears to be
621 potential in such practices for diversifying the tourist-generating countries that support each
622 other in this respect. This is likely to create a de facto criterion that directly or indirectly
623 influences the competitive edge of destinations in different groups.

624 **Conclusions and implications**

625 Over the last two decades, the literature has placed particular emphasis on the transition from
626 business-oriented (micro-level) competitiveness to destination-oriented (macro-level)
627 competitiveness. As a result, there has been an incremental increase in the number of related
628 studies (for an extensive list, see Aguiar-Barbosa et al., 2021; Cronjé & du Plessis, 2020).
629 However, individual businesses are now less powerful in the international market than
630 destinations. Moreover, specific destinations are unlikely to be as strong as countries in the
631 future, because governments have become more powerful thanks to the recent risks to safety
632 and security. As a result, we may need the creation of new actors that will play a much
633 stronger role in the global dissemination of information. Instead of specific destinations, it is
634 countries, on behalf of their micro and macro tourism industry, that will need to provide larger
635 budgets for sustained publicity efforts and for enforcing their international relations so that
636 they can secure stronger positions in the market and counter any misleading information (He,

637 Liu, & Li, 2021; Novelli, Burgess, Jones, & Ritchie, 2018; Wen et al., 2021). As such, the
638 consideration of best practices will provide avenues for the implementation of benchmarking
639 and justification of future investment.

640 Previous research on destination competitiveness has placed considerable emphasis on
641 the development of new products and services, marketing products, and services and
642 destinations, using technology to enhance the tourist experience, soft and hard quality
643 indicators that influence destination competitiveness, and the importance of branding and
644 positioning for destinations. There are also studies highlighting the importance of safety and
645 security for destination competitiveness. More specifically, health and safety concerns have
646 been investigated in relation to hygiene and the SARS, Ebola, and swine flu epidemics. These
647 studies make a distinct contribution to our understanding of destination competitiveness from
648 different perspectives. However, none of them has considered how extreme health situations
649 could force a transformation in familiar paradigms and principles or introduce new actors into
650 the complex phenomena of destination competitiveness.

651 This study is one of the first to use chaos theory in order to evaluate the implications
652 of the COVID-19 pandemic for destination competitiveness. In particular, it discusses the
653 butterfly effects of COVID-19 on travel and destinations, identifying shifts in tourist behavior
654 and post-pandemic destination competitiveness as the key indicators of the edge of chaos. It
655 also evaluates growing health and safety risk concerns as the main cosmology of the current
656 COVID-19 disruption. The study then goes on to explore technology and the digitalization of
657 the tourist experience, risk management, and strategic alliances as the key responsive
658 bifurcation behaviors of destinations. Moreover, it introduces the concept of health and
659 safety-driven self-organization for destination competitiveness, and examines the role of
660 governments and health authorities as strange attractors in this self-organization.

661 The most distinctive contribution of this study is that it proposes a model, the butterfly
662 competitiveness model that captures the edge of chaos of the tourism industry, the butterfly
663 effects of COVID-19, cosmology, bifurcation events and behaviors, health and safety-driven
664 self-organization for destination competitiveness, and the role of governments and health
665 authorities as strange attractors. We argue that tourist behavior and experiences are rapidly
666 shifting away from being adventurous to being more controlled and health and safety-driven.
667 Risk management, strategic alliances, technology, and the digitalization of the tourist
668 experience have emerged as key destination behaviors in the new normal. Most importantly,
669 destinations need to adopt a health and safety-driven approach to survive and maintain a
670 competitive advantage. All these developments are driving the emergence of governments and
671 health authorities as key players in the transformation and self-organization of tourism
672 destinations.

673 The butterfly competitiveness model does not disregard the destination
674 competitiveness indicators identified by the previous literature. It acknowledges the
675 importance of all the indicators including the development of new products and services,
676 marketing products, and services and destinations, using technology to enhance the tourist
677 experience, as well as soft- and hard-quality indicators. What is distinctive with this model
678 though is that it places 'health and safety' at the heart of destination competitiveness. The
679 butterfly competitiveness model suggests that destinations need to meet the health and safety
680 concerns of the host communities, travelers and other stakeholder groups in order to remain
681 competitive in the tourism market. The butterfly competitiveness model advocates that a
682 destination could have the best products and services as well as the most 'effective marketing
683 campaigns' to attract travelers. However, unless a destination puts the necessary health and
684 safety strategies and procedures in place to reduce anxiety among the travelers, it will not
685 remain competitive and/or lead the competition.

686 The butterfly competitiveness model suggests that destinations have entered an
 687 exceptionally ‘dynamic era’ of change and uncertainty. The wings of the butterfly
 688 demonstrate the ‘ripple effects’ and possible ‘unknown’ implications of COVID-19 that make
 689 ‘destination competitiveness’ more vulnerable. Such dynamism, uncertainty and vulnerability
 690 render strategic alliances more important than ever before. In addition, the management of
 691 ‘health and safety’ risks requires adopting a proactive and transformational approach to risk
 692 management. Destinations need to proactively learn health and safety implications of
 693 COVID-19 (and its variants) in order to transform themselves to adapt to the unpredictable
 694 consequences of COVID-19 and thus remain competitive. Technology and digitalization
 695 enrich the visitor experience but could also play an important role to identify COVID-19
 696 cases among host community members and travelers and introduce health safety measures
 697 accordingly.

698 The butterfly competitiveness model also suggests that as destinations transform
 699 themselves to adapt to the unpredictable consequences of COVID-19 and strive to remain
 700 competitive in the tourism market, they need to demonstrate health leadership – a visionary,
 701 proactive and systematic approach to ‘health management’ that could act like ‘an enabler’ for
 702 tourism activities in both domestic and international markets. Marketing strategies and
 703 campaigns need to respond to the health and safety concerns of the travelers in order to reduce
 704 the level of anxiety and develop the image of a ‘safe destination’ for traveling. Benchmarking
 705 of health strategies and practices (both internal and external) is essential in order to develop
 706 stronger synergies between tourism and health and achieve ‘health protected’ tourism
 707 destination competitiveness.

708 Finally, the butterfly competitiveness model identifies the crucial and growing role of
 709 governments and health authorities in destination competitiveness. Governments and health
 710 authorities need to play a visionary role in helping the destinations to establish strategic
 711 alliances, taking the lead role in developing and implementing risk management, technology,
 712 and digitalization strategies. Governments and health authorities also need to help the
 713 destinations develop leadership in health management as well as health-centered marketing
 714 strategies. As such, destination benchmarking could be facilitated through the information (i.e.
 715 statistics) provided by the governments and health authorities; this information, however,
 716 needs to be shared openly and transparently.

717

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