

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.

1. 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, 2003a, 2003b). 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 know the location in a broader sense, seeing new places, gaining new experiences, and spending more time on outdoor activities (Crompton, 1979; Mayo & Jarvis, 1981; Yoon & Uysal, 2005).

An extensive review of the literature by Cronjé and du Plessis (2020) indicates that destination competitiveness, as an academic subject, has attracted much interest in the field of tourism research over the last two decades. Such studies have considered destination competitiveness from the demand side (e.g., number of tourists, tourism expenditures, distance traveled, and number of nights spent) and/or from the supply side (e.g., attractions, facilities, climate, services, and prices). Safety and security have been considered among the top factors on the supply side (e.g. Gómez-Vega & Picazo-Tadeo, 2019; Ritchie & Crouch, 2003a, 2003b; Luštický & Štumpf, 2021). Studies have also considered

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competitiveness from the management and/or marketing perspectives, focusing on how to improve the quality and variety of products and services at the destination (e.g. Gomezelj & Mihalic, 2008; Gürsoy, Baloglu, & Chi, 2009; Kozak & Baloglu, 2011; Ritchie & Crouch, 2003a, 2003b). As such, understanding visitors' perceptions of supply-side factors or the opinions of tourism experts has to date been central to measuring the competitiveness of destinations. However, in an extensive network analysis regarding definitions of tourism competitiveness, Aguiar-Barbosa, Chim-Miki, and Kozak (2021) observed that the literature has neglected the question of how extreme health situations can force the transformation of some of the familiar paradigms and principles, resulting in new actors in the complex phenomenon of destination competitiveness.

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

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

As a consequence, the present study revisits the subject of destination competitiveness by introducing possible new actors and paradigms in terms of chaos theory and the butterfly effect. The study proposes a model, the butterfly competitiveness model, to capture the edge of chaos in the tourism industry, the butterfly effects of COVID-19, cosmology, bifurcation events and behaviors of tourism destinations, and health and safety-driven self-organization for destination competitiveness. It also clarifies the role of governments and health authorities as strange attractors of self-organization in what is referred to as the "new normal."

2. Chaos theory

Chaos theory covers a set of "loosely related theoretical and meta-theoretical orientations to the behavior of complex non-linear systems" (Seeger, 2002, p. 239). It is concerned with the existence of unpredictable, non-linear relationships and complex elements of systems. The theory suggests that non-linear and complex systems can self-organize, transform, and renew themselves (Seeger, 2002) and, more importantly, that as a result of this transformation they can demonstrate stability, structure, and order (Murphy, 1996; Seeger, 2002). As Levy put it, "it is the promise of finding a fundamental order and structure behind complex events that probably explains the great interest chaos theory has generated in so many fields" (1994, p. 169).

Chaos theory signals several important paradigms that can be used as a theoretical lens to understand and explain the implications of COVID-19 for the tourism industry, with particular reference to destination governance and competitiveness.

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

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

The other underlying principle of chaos theory is twofold: bifurcation and cosmology. Bifurcation is concerned with "the flashpoints of change where a system's direction, character, and/or structure are fundamentally disrupted by crisis events and behaviors are often described in chaos theory as these points of system bifurcation" (Sellnow, Seeger, & Ulmer, 2002, p. 271). We can see much evidence of bifurcation in the tourism industry as a result of COVID-19, including the changing nature of the tourist experience, the transformation of destination management and competitiveness, the evolving roles of different stakeholder groups in the global tourism industry, developments in managers' perceptions and handling of different forms of risks, and the increasing importance of cross-country, regional, and global collaboration. All of these factors demonstrate a new direction, character, and structure for the tourism system (Zhang & Blasco, 2021). More specifically, the "untact service" style that takes account of social distancing requirements of the new normal can be given as an example (Ali, Dogan, Amin, Hussain, & Ryu, 2021; Finsterwalder, 2021; Khoa et al., 2021). This minimizes face-to-face contact as a self-preventive attitude to risk and safety, including technology-based and non-digitalized "untact" behaviors used for health protection objectives consisting of camping or hiking, and personalized special services such as room service or special family dining rooms (Bae & Chang, 2021).

A cosmology occurs when people realize that the world and the environment in which they live are no longer rational and orderly. There is usually a widespread belief among people that "both the sense of what is occurring and the means to rebuild that sense collapse together" (Weick, 1993, p. 634). Indeed, COVID-19 cosmology now exists because there is ongoing investigation into the cause of the virus and how it spreads, evolves, and mutates. There are also growing concerns among the public that the world of travel will never be the same again.

Therefore, today's COVID-19 world is a new normal (Gössling, Scott, & Hall, 2021; Sigala, 2020; Wen et al., 2021) that will eventually lead to novel and innovative ways of producing and delivering tourism products and services, new ways of competing as destinations, and creative ways of governing tourism destinations (Gürlek and Koseoglu, 2021). New generation technologies, including artificial intelligence (AI), service robotics, and smart devices in promoting and managing tourist destinations can be given as examples for cosmology in the post-pandemic world. AI can also be a useful tool to monitor, gather information, and control, evaluate and execute energy consumption in destinations (Maximpact, 2021). In the new normal, these technologies can also be utilized to enhance energy efficiency in tourist destinations (Chen, Hu, Karupiah, & Kumar, 2021).

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

Bifurcation and self-organization move the benchmark of good practice in line with the new normal and force systems (including destinations and organizations) to improve (Speakman & Sharpley, 2012). The concept of strange attractor points to techniques which may encourage stability, rational thinking, and order from chaos. Sellnow et al. (2002) defined strange attractors as values, needs, and

assumptions that guide a social system toward relative stability following bifurcation. Similarly, Zahra and Ryan described them as providing a “common vision, sense of meaning, strategy or value system that drives people to achieve common goal” (Zahra and Ryan, 2007, p. 855). In the case of COVID-19, protecting the health and safety of travelers and host communities has become the top priority of destinations and policymakers, and concern for health and safety has become the core value that cuts across and underpins global, regional, and national tourism strategies and policies. Protecting the health and safety of travelers and citizens is the key principle of the new normal, forcing destinations to look for and establish their own “normality” within new paradigms. The result is the growing importance of new stakeholders, governments, and health authorities: strange attractors who strive to bring order from chaos and thus create the conditions for a new order to evolve.

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

3. Edge of chaos: shifts in tourist behavior and post-pandemic destination competitiveness

COVID-19 provides the best example to date of the butterfly effect, as nothing has remained unaffected, either positively or negatively. The pandemic has adversely affected the economic structure of many countries, as well as their daily lifestyle, and continues to do so. Just as individuals have had to postpone or abandon their vacation plans, adjust their diet, or change their work patterns, so businesses have had to adapt in order to survive. In particular, future visitors to destinations are expected to be more independent (e.g., planning their own trips), more experienced (e.g., traveling more but with shorter lengths of stay), more nature-oriented (e.g., preferring quieter locations), and more informal (e.g., having freedom to act in the direction of own choice). They are

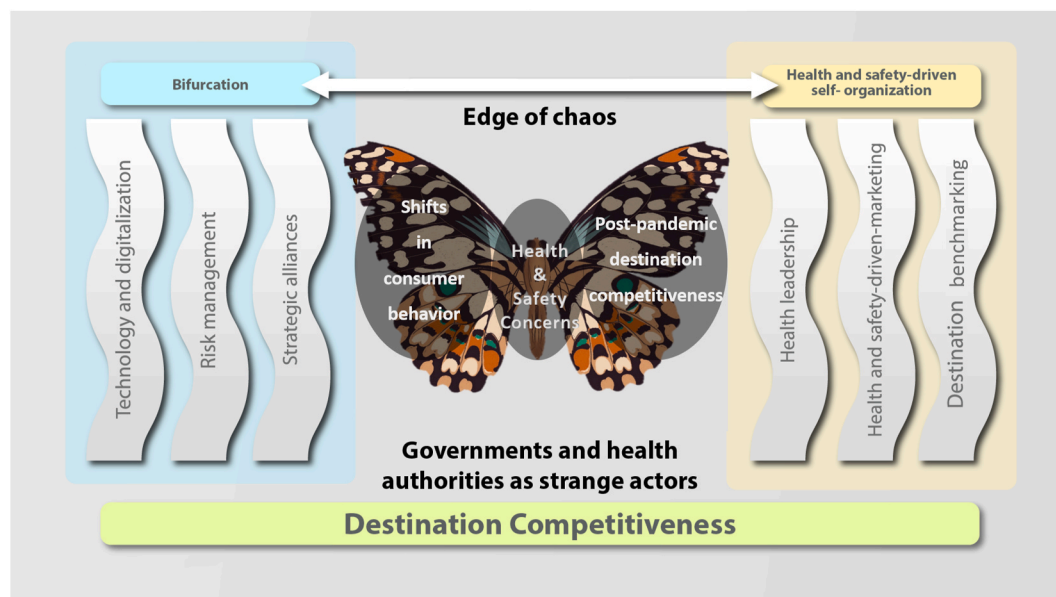


Fig. 1. A proposed model of destination competitiveness.

likely to prefer small-scale informal facilities for overnight stays, avoiding densely populated areas and using individual vehicles to travel (Wen et al., 2021).

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

In the tourism context, the way the destination system works has changed or is about to change. The change may create a chaotic system that leads, directly or indirectly, to the re-establishment of stability and order in the distribution, management, or service delivery systems (e.g., through the application of online selling and cost-reduction strategies, or the delivery of restricted services due to social distancing; Hameed et al., 2020; Pavlatos et al., 2021). The COVID-19 pandemic appears to be the mediating factor of this second wave that is establishing new regulations and practices to maintain the safety and security of customers, allowing them to be more self-confident and risk-free on a vacation (e.g., Ivanova, Ivanov, & Ivanov, 2021; Wen et al., 2021). One clear way to make this happen is by launching more effective management of tourist destinations. Even if destinations' missions remain similar, their functions are highly likely to be adjusted in line with the changing needs on the demand side and the new operations and practices on the supply side, including those of hoteliers, retailers, and local authorities.

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

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

4. Cosmology: growing health and safety concerns

Mobility and travel have always been affected by health risks (e.g., Hassan & Soliman, 2020; Sánchez-Canizares, Cabeza-Ramírez, Muñoz-Fernández, & Fuentes-García, 2020; Zhu & Deng, 2020). In particular, epidemics and pandemics have a severe and enduring influence on risk perceptions and travel decisions (Kozak, Crofts, & Law, 2007; Mertzani & Papastathopoulos, 2021; Zenker & Kock, 2020). Overseas

travel and visits to exotic destinations have been affected by travelers' health and safety-based perceptions of risk in connection with public transport, poorly sanitized beaches, toilets, and restaurants, or interactions with other people (Zenker, Braun, & Gyimóthy, 2021). People are therefore increasingly deterred from travel by the risk of contracting disease (Ivanova et al., 2021; Joo, Henry, Lee, Berro, & Maskery, 2019).

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

With COVID-19, risks seem destined to remain a major managerial and destination concern for the foreseeable future, and the overall effectiveness of tourism destinations and organizations depends to a great extent on the actions of policymakers and managers (Haque & Haque, 2018; Zhang & Blasco, 2021). Accurate perception of inherent risk in the environment by policymakers and managers has therefore become a vitally important aspect of the strategic planning and management process (Pavlatos et al., 2021). Indeed, given the association of COVID-19 with economic recession, concerns about risk in relation to health, political, economic, and social conditions are intensifying (Chen, Demir, García-Gómez, & Zaremba, 2021). Hao, Xiao, and Chon (2021) have argued that we can no longer talk about crisis management; instead, tourism organizations, and tourism service providers in particular, should adopt a "disaster management approach" that involves multiple businesses and multiple channels, product design and investment preferences, digital and intelligent transformation, and market reshuffles.

5. Bifurcation

5.1. Technology and digitalization of the tourist experience

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

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

As such, the outcome of all these practices will be an enrichment of the visitor experience (Kontogianni & Alepis, 2020; Tussyadiah & Zach, 2012; Wang et al., 2013), as well as a transfer of knowledge and

networks among shareholders (Del Chiappa & Baggio, 2015; Ivars-Baidal et al., 2021). All these are the drivers of destination competitiveness. As a result, scholars are increasingly suggesting that, with the support of smart applications, the tourism experience will be more digitalized and more shared, reminiscent of the pre-COVID-19 predictions of more collaborative tourism consumption. By increasing the mobility of potential tourists, technology has also provided easy access to destinations, in either the short or the long term. The provision of proactive health and safety-centered services for identifying early signals through smart technology, within a single destination or across a number of destinations, can also create an advantage for the destinations that participate in the system. These developments emphasize the importance of strategic thinking in creating positive tourist experiences and the importance of cross-border marketing or complementary product designs for destinations (e.g., Kozak & Buhalis, 2019).

5.2. Risk management

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

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

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

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

In support of this view, Paraskevas and Altınay (2013) argued that, given their high interconnectivity with all aspects of society, including political, economic, social, technological, and environmental aspects, tourism destinations and organizations are particularly vulnerable to

crises and are affected by every possible type of disruption. Therefore, a proactive approach to risk or crisis management should involve crisis signal detection that consists of signal scanning, capture, and transmission to the crisis response center embedded within the tourism ecosystem. For instance, new tourism product design should allow customers to maintain a healthy and balanced lifestyle, ensure social distancing, and reduce close contact.

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

In order to handle the current crisis, albeit partially, countries including Turkey, France, Italy, Spain, and Portugal have provided support packages for their national tourism industries. In order to create a positive image and show that the required safety measures are being taken, countries have also implemented various procedures and items of legislation. For instance, Turkey has created and implemented a system of “safe tourism certification,” that documents all the measures that hoteliers must adopt to maintain appropriate standards of hygiene and sanitation from check-in until check-out. The system particularly emphasizes how social distancing can be maintained between employees and customers and among customers, which is particularly important for elderly customers and family groups. This response has helped the national tourism industry to win the confidence of international visitors and is an important factor in their choice of Turkey as a destination.

5.3. Strategic alliances in destination competitiveness

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

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

In particular, organizations and destinations cooperate when it comes to joint marketing, removal of visa restrictions, free flow of people (as in the case of the European Union), joint product development and marketing, and joint transportation. The scope of these

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

With the emergence of COVID-19, countries and destinations have collaborated to create safe tourism “bubbles” for citizens who wish to travel to other countries. For example, Greece, Cyprus, and Israel have sealed agreements that allow citizens with COVID-19 vaccination certificates to travel without restrictions between the three countries (Mayling, 2021). Similarly, the European Union has taken a collective effort among member countries and made its COVID-19 passport available for all EU citizens and residents, as well as for specific categories of travelers from third countries (Schengenvisaifonews, 2021). Through the certificate, the Commission intends to remove travel restrictions (within the European Union) such as entry bans, quarantine obligation, and testing. Destination competitiveness is thus now impacted by alliances between countries in terms of health and safety collaboration and bilateral agreements. These developments render destination benchmarking more important than ever.

6. Self-organization and strange attractors

6.1. Health and safety-driven self-organization for destination competitiveness

There are no specific factors related to the determinants of destination competitiveness. Tourism competitiveness is a general concept that encompasses price differentials coupled with exchange rate movements, the productivity levels of various components of the tourism industry, and qualitative factors that affect the attractiveness or otherwise of a destination (Dwyer & Kim, 2003). The use of tourism resources and the protection of their unique features and attractiveness are among the primary factors in maintaining the power of competitiveness (Kozak & Rimmington, 1999; Vanhove, 2006). Over the last two decades, alongside 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 et al., 2011; Pike, 2004; Tasci & Kozak, 2006). In this context, destination competitiveness can be defined as the ability of a destination to provide customers (tourists) with products that maximize satisfaction and are distinctive from and of a higher quality than those of other destinations—and to sustain this outcome.

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

With the emergence of COVID-19, destinations are now adapting themselves to the new normal by vaccinating their population, vaccinating their health, tourism, and hospitality employees, and improving

their health infrastructures (Gursoy et al., 2021). In fact, tourism and health have become so interrelated that tourism activities are highly unlikely to restart unless certain health preconditions are met by destinations. Many proactive destinations now see health and safety-driven self-organization as a route to destination competitiveness. For example, Greece is planning to vaccinate the entire population on Greek islands in order to create COVID-free tourism destinations for international travelers. This, however, requires travelers to show their “vaccine passports” before entry. Israel, one of the few countries where the population has been widely vaccinated, sees addressing the health and safety concerns of international travelers as a source of competitive advantage not only for the tourism industry but also for the other sectors of the national economy.

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

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

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

Marketing strategies, campaigns and ‘image building’ exercises of destinations will require conveying confidence-building measures among the travelers (Gursoy et al., 2021; Hassan & Soliman, 2021). These should cover health and safety measures and priorities of the destinations. In fact, destinations such as Greece, Israel and Hong Kong started to develop and run health and safety-driven marketing campaigns in order to attract international travelers and also to build the ‘image’ of being safe destinations in terms of ‘health risks.’ For example, Greece has launched a new campaign aimed at promoting the country as a safe tourism destination amid the coronavirus pandemic with a reassuring message that the country complies with all the necessary health

and safety protocols. More specifically, Hong Kong Airports has deployed autonomous robots equipped with both a UV light sterilizer and an air sterilizer that kill up to 99.99% of bacteria and viruses in the air and on object surfaces in just 10 min. This innovative health protection measure and practice is being widely marketed among the international travelers.

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

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

6.2. Governments and health authorities as strange attractors

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

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

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

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

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

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

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

groups.

7. Conclusions and implications

Over the last two decades, the literature has placed particular emphasis on the transition from business-oriented (micro-level) competitiveness to destination-oriented (macro-level) competitiveness. As a result, there has been an incremental increase in the number of related studies (for an extensive list, see Aguiar-Barbosa et al., 2021; Cronjé & du Plessis, 2020). However, individual businesses are now less powerful in the international market than destinations. Moreover, specific destinations are unlikely to be as strong as countries in the future, because governments have become more powerful thanks to the recent risks to safety and security. As a result, we may need the creation of new actors that will play a much stronger role in the global dissemination of information. Instead of specific destinations, it is countries, on behalf of their micro and macro tourism industry, that will need to provide larger budgets for sustained publicity efforts and for enforcing their international relations so that they can secure stronger positions in the market and counter any misleading information (He et al., 2021; Novelli, Burgess, Jones, & Ritchie, 2018; Wen et al., 2021). As such, the consideration of best practices will provide avenues for the implementation of benchmarking and justification of future investment.

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

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

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

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

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

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

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

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