Modelling the crisis management and impacts of 21st century disruptive events in tourism: the case of the COVID-19 pandemic

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Abstract

Purpose – *This paper aims to analyse the most significant disruptive events affecting tourism during the twenty-first century, particularly the 2020 COVID-19 pandemic.*

Design/methodology/approach – *Based on a thorough literature review, this study takes a complexity science approach to the field of tourism to shed light on the challenges of disruptive events in tourism systems.*

Findings – *Focusing on the COVID-19 pandemic, in particular, this study acknowledges that disruptive events are complex and have tremendous impacts on several areas of society: people's psychological well-being and the health-care system, as well as social, economic, cultural, technological, environmental and political dimensions. Whether they occur alone or interact, these dimensions add varying levels of complexity to the tourism system. In response, the tourism industry can adopt a resilience model as a crisis management tool to address disruptive events affecting this field.*

Research limitations/implications – *As this paper is mainly theoretical, future empirical research will contribute to refining the findings and testing the usefulness of the proposed model.*

Practical implications – *The paper looks at examples of successful and unsuccessful of COVID-19 outbreak management in various countries to analyse issues such as crisis management, resilience and tools for coping with the impacts of disruptive events.*

Originality/value – *This theoretical paper proposes a first taxonomy of the multidimensional impacts of twenty-first-century disruptive events on tourism and dissects the phases of crisis management, with a corresponding conceptual model.*

Keywords *Complexity, Impact, Crisis management, Black swan, COVID-19 pandemic outbreak, Disruptive event*

Paper type *Conceptual paper*

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21世纪旅游业破坏性事件的危机管理和影响建模：以新型冠状病毒肺炎大流行为例
研究目的 ：本文分析了21世纪影响旅游业的最为重要的破坏性事件，尤其关注2020年新型冠状病毒肺炎大流行
研究设计/方法论/方法：本文将复杂性科学方法应用于旅游领域，通过全面的文献综述，揭示破坏性事件给旅游系统带来的挑战。
研究结果：本文承认破坏性事件，特别是新型冠状病毒肺炎大流行，复杂且影响巨大，涉及心理、医疗、社会、经济、文化、技术、环境和政治等诸多方面。这些影响不管是单一的还是相互作用的，都在不同程度上增加了旅游系统的复杂性。旅游业可以将弹性模型作为危机管理工具，以应对其领域内的破坏性事件。
原创性：本文首次提出了21世纪破坏性事件对旅游业的多维影响的分类法，并对危机管理的各个阶段进行了剖析。本文还提出了一个综合模型。
研究局限性/意义 ：由于本文以理论为主，未来的实证研究将有助于完善研究结果和验证所提出模型的实用性。
实践意义：本文着眼于不同国家新冠疫情管理的成功和失败案例，分析危机管理、复原力以及应对破坏性事件影响的方法等问题。
关键词 破坏性事件，新型冠状病毒肺炎爆发，危机管理，影响，复杂性，黑天鹅
文章类型：概念性文章

Creación de un modelo de gestión de crisis e impactos de los eventos disruptivos en turismo del siglo XXI: el caso de la pandemia del COVID-19

Propósito : *Identificar los eventos disruptivos mundiales más importantes que han afectado el turismo en el siglo XXI poniendo especial atención en la pandemia causada por el COVID-19 en el 2020.*

Diseño/metodología/enfoque : *Mediante un enfoque a las ciencias de la complejidad aplicado al turismo y una exhaustiva revisión bibliográfica, este artículo esclarece el reto que significa un evento disruptivo en el turismo.*

Resultados : *Los eventos disruptivos, en particular el COVID-19, son complejos y generan un alto impacto tanto en el aspecto psicológico, sanitario, social, económico, cultural, tecnológico, medioambiental y político. En su interacción, todos ellos añaden un diferente grado de complejidad al sistema del turismo. Este artículo propone adoptar un modelo de resiliencia como herramienta de gestión de crisis para afrontar eventos disruptivos en el campo del turismo.*

Originalidad : *Proponer una primera clasificación de los impactos multidimensionales de los eventos disruptivos del siglo XXI en el turismo y un desglose de las fases de gestión de crisis, como así también proponer un modelo integrador de ambos aspectos propios de un evento disruptivo.*

Limitaciones de la investigación/implicaciones : *Debido al carácter teórico de este artículo, el modelo integrador sugerido representa un marco prometedor para futuras investigaciones en el plano empírico.*

Implicaciones practices : *Este artículo presta atención a aquellos países que han gestionado la pandemia de forma exitosa o no, para así tener una mejor noción de gestión de crisis y herramientas para hacer frente a futuros eventos disruptivos.*

Palabras claves: *Evento disruptivo, COVID-19, Gestión de crisis, Impacto, Complejidad, Cisne negro*
Tipo de artículo: *artículo conceptual.*

1. Introduction

Throughout the twentieth century, tourism destinations have been analysed according to their life cycle (Butler, 1980). The twenty-first century, however, has put these classical tourism destination models in a new light. Globalization and other trends have introduced new variables to the industry, leading to more complex and dynamic tourism life cycles (Butler, 2004; Hall and Butler, 1995; Russell, 2005; Russell and Faulkner, 2004). Tourism development is influenced by both internal and external factors, the interaction of which lead destinations to behave in a non-linear way (Baggio, 2008; McKercher, 1999), making evolutionary processes much more complex (Baggio, 2019; Farrell and Twining-Ward, 2004; Faulkner and Russell, 1997).

According to a concept developed by Taleb (2007), some of these critical events (e.g. terrorist attacks, economic crises, natural disasters, political conflicts or pandemics) can be classified as black swans (unpredictable) or white swans (that could be predicted): they cause a major turn of events that can lead to a continued and extended critical situation with devastating consequences; and once they occur, they are rationalised by hindsight. Among the most recent events are the 2001 terrorist attacks, the severe acute respiratory syndrome (SARS) epidemic in 2003, the 2008–2009 world economic crisis and the COVID-19 pandemic in 2020, all of which brought the world to a temporary standstill.

The aim of this paper is to analyse these disruptive global events. The research question is thus: in complex disruptive events, which factors need to be taken into account to address the subsequent crisis and the impact this has on tourism systems? An in-depth literature review is used to describe major events in the twenty-first century that have led to radical changes in the tourism industry and to analyse the impacts of the COVID-19 outbreak. An integrative conceptual model of the phases of crisis management and the impacts caused by such events in tourism is proposed. This paper contributes with new insights and opens new avenues for further research on the complexity of tourism systems (on a theoretical level) and on the mitigation and recovery strategies that tourism should develop to face future critical events (on an empirical level).

The paper is presented in six sections. Section 2 describes the methodology. Section 3 identifies the most important disruptive events that affected tourism during the twenty-first century, with special emphasis on the COVID-19 pandemic and proposes a first taxonomy of the multiple impacts of the pandemic on tourism. Section 4 discusses how different governments have managed the COVID-19 crisis and dissects the main crisis management phases involved in resetting tourism after COVID-19. Section 5 summarizes the previous two chapters by building a conceptual model and Section 6 summarizes the final remarks on the complexity of tourism systems affected by disruptive events.

2. Methodology

This theoretical research has exclusively used an in-depth literature review. Using data from the World Tourism Organization (UNWTO), it identifies four major disruptive events in the twenty-first century, including COVID-19 (UNWTO, 2020a). The most relevant indexed Journals (JCR and SJR) were searched using keywords such as disruptive event, 2001 terrorist attacks, SARS epidemic, 2008–2009 global economic crisis and COVID-19 pandemic outbreak. Articles outside the domain of tourism were filtered out, leaving 104 selected articles for analysis. This selection was complemented with other grey literature publications from international institutions and media. Publications particularly focusing on crisis management and the impacts of disruptive events were analysed by two researchers separately. The results were subsequently shared and discussed to reach a consensus. As this is exploratory conceptual research, further empirical studies would help corroborate our findings.

3. Global disruptive events and their impacts in tourism

This section describes the principal disruptive events of the twenty-first century and reviews the main theoretical contributions regarding their impacts on tourism systems.

3.1 Global disruptive events (black swans) in tourism

The tourism industry is one of the main sectors of the economy to experience the damaging consequences of a disruptive event. During the twenty-first century, a number of events had a far-reaching global impact on tourism. The 2001 terrorist attacks in the USA drastically affected tourism and was unanimously considered a black swan event (The New York Times, 2004). The 2003 SARS epidemic had up to five times more impact on international travellers than the September 11 attacks (UNWTO, 2020a). The 2008–2009 global economic crisis has also been referred to as a black swan event (Financial Times, 2010). Finally, the recent COVID-19 pandemic is likely to be the most devastatingly disruptive event in the history of tourism, despite being considered a white swan by Taleb (The New Yorker, 2020).

COVID-19 is an unexpected "epic disaster" (Romagosa, 2020, p. 2) and the result of a complex combination of several crises. According to Higgins-Desbiolles (2020, p. 11), "we are in an era of a major change of the equivalent of a world war or great depression". As yet, there is no consensus on how to respond to a transition of such magnitude; one which for some instils fear, but for others, brings opportunity. Although the pandemic has painted a number of scenarios with seemingly unstoppable impacts, it has also brought an unexpected opportunity to change paradigms and which could lead to a shift from an unsustainable pre-pandemic world towards long-term, resilient and sustainable global practices (Ritchie, 2004; Romagosa, 2020).

Humans are responsible for the increasing number and types of emerging crises and disasters (Ritchie, 2004). In the current Anthropocene era, the abuse of the Earth's resources has reached saturation point and human activity is greatly affecting the

environment. The COVID-19 pandemic has highlighted a range of inequalities which cause economic and socio-political instability, particularly between developed and developing countries (Brouder *et al.*, 2020). The challenge, however, involves maintaining a consistent balance between all sectors while diversifying the world economy (Loorbach *et al.*, 2017).

The pandemic has practically ground the tourism industry to a halt, forcing it to re-think, re-design and re-direct new sustainable strategies to reset and reboot tourism, while also taking a responsible and mindful approach which is based on human rights and social justice for people and communities (Higgins-Desbiolles, 2020). This emphasises the urgent need to avoid going back to normal pre-pandemic life (Lew *et al.*, 2020). As Brouder *et al.* (2020, p. 12) state, "what really matters is the planet, people, and our families".

3.2 A proposed taxonomy of the impacts of COVID-19 on tourism

Although the body of literature on applying complex systems science to the tourism domain is still in its infancy, it is slowly growing (Baggio, 2019). This scarcity in the literature to date maybe because it is extremely difficult to monitor all possible interactions among variables and to design forecast models for complex systems such as tourism. The properties of a complex system are distributed over a range of scales and are subject to change and this is why any analysis of the tourism system will perforce be incomplete (Baggio, 2017).

Complexity increases exponentially when tourism systems are affected by a disruptive event. However, it is possible to analyse the elements that constitute this complexity and some of the relationships between them. This knowledge allows understanding better the framework within which complex systems operate in tourism. The purpose of this section is to discuss the dimensions of the impact of the COVID-19 outbreak raised by the literature that constitutes the complexity of tourism systems. These dimensions include the psychological, healthcare, social, economic, cultural, technological, environmental and political perspectives (McKercher, 1999).

3.2.1 Psychological dimension. COVID-19 has decreased individuals' motivation to travel due to a bombardment of information and fake news which causes anxiety, fear, anger, panic and psychological trauma (Zurich, 2020). The pandemic has also created uncertainty surrounding job security, with the World Travel and Tourism Council estimating that around 50 million jobs worldwide are at risk (Nicola *et al.*, 2020). As a consequence, people are suffering the psychological effects of the pandemic and mental health issues have risen, especially among those living hand-to-mouth and unable to count on reserves (Douglas *et al.*, 2020). At the same time, solidarity and support have been key to bolstering people's psychological well-being (WHO, 2020a). Concerns about the consequences of the health crisis have revived a global "sense of community" and individual responsibility and awareness and charity have developed new forms of collective cooperation (The Heritage Foundation, 2020).

3.2.2 Health-care dimension. National governments assumed the main responsibility for implementing measures to mitigate the impact of the outbreak (Melly and Hanrahan, 2020; Sułkowski, 2020). These governments have taken decisions on quarantine schedules, financial aid and the organisation of public health, including the phases of de-escalation. To restart tourism activities safely, the World Health Organization (WHO) (2020b) has released a series of operational considerations for the tourism and hospitality industry aimed at assuring safety protocols and high hygiene standards, thus reducing contagion rates. These efforts contribute to minimising tourist stress when planning future trips (Wen *et al.*, 2020).

3.2.3 Social dimension. Social habits and values have changed as a result of the COVID-19 pandemic. In the tourism sector, the concept of "leisure" (Dumazedier, 1974) has adapted and taken on novel forms which include new home-based practices (WHO, 2020b). According to Douglas *et al.* (2020), the COVID-19 outbreak has caused "social trauma".

This means that social gatherings and events in the so-called "new" normality will have to conform to social-distancing practices. People's behaviour is evolving in such a way that in the future, normally popular and crowded attractions will be less sought after and hidden spots more pursued. Consumer behaviour has also changed and healthy, socially responsible organic products and services are gaining momentum (Everingham and Chassagne, 2020; Galvani et al., 2020).

3.2.4 Economic dimension. The COVID-19 pandemic has shown its overwhelming effects on the economy, causing total disruption to tourism activities due to lockdown. It has impacted travel and tourism like no other event before in history: aircraft have been grounded, hotels have been closed and bans put on all travel as a measure to stop the outbreak (UNWTO, 2020a, 2020b). It is expected that COVID-19 will lead to a global recession (UNWTO, 2020a, 2020c), with a major debt crisis for governments (Forbes, 2020a). The high level of uncertainty makes it difficult to predict how the economy is going to react once restrictions are completely lifted (UNWTO, 2020a). In countries where tourism is a key pillar of the economy, governments urgently need to develop a plan for its economic recovery and development (Higgins-Desbiolles, 2020). Some measures could include offering the industry interest-free loans, flexible mortgages or other financial help (Assaf and Scuderi, 2020).

3.2.5 Cultural dimension. The real essence of a cultural visit (European Travel Commission, 2005; MacCannell, 2003) was lost due to lockdown and social distancing during the COVID-19 outbreak, as the real and "tangible" experience is only possible *in situ* (Council of Europe, 2020). The UNWTO (2019) points out that before the COVID-19 outbreak, cultural tourism destinations were a dynamic element of urban tourism destinations and in high demand. Once the pandemic is overcome, cultural events such as exhibitions, performances and shows will have to adapt to new policies on social distancing, such as limiting seating space. The number of cultural activities and events are also likely to decrease and large events may be avoided or not offered for a prolonged period of time.

3.2.6 Technological dimension. Most economic sectors are in decline due to the COVID-19 crisis and social distancing has forced the world to embrace digital technology (Sułkowski, 2020; WHO, 2020a). Technology has facilitated a quick response to lockdown and government restrictions and has contributed to a slow economic recovery of the tourism industry as it has managed to engage future potential travellers through smart technologies and "virtualise" their experiences (BBC, 2020; Buhalis, 2019; Sigala, 2020; World Economic Forum, 2020). The internet has become an essential tool for keeping daily life as normal as possible. It is also a platform for creating online tourism experiences and traveller support groups. To capture potential future clients, destinations are using online promotional techniques in a "try before you buy" type of scenario (Forbes, 2020b). Hotels, museums, parks and other tourist attractions are also using technology for the same purposes.

3.2.7 Environmental dimension. COVID-19 has changed the course of events, transforming over-crowded destinations with large urban centres and long queues of visitors into silent, empty spaces (National Geographic, 2020). Although the COVID-19 pandemic has decreased carbon emissions and contamination levels in several cities around the world (NASA Earth Observatory, 2020), it has also brought new problems for the environment. Disposable face masks and protective gear and increased use of plastic packaging from the higher number of takeaway deliveries are having a major impact on the environment (Reuters, 2020; United Nations Conference on Trade and Development, 2020). It is also expected that global recession will hinder investment in green energy and that sustainability will not be top of the agenda for the world's nations as the pandemic urges countries to introduce new health and economic measures (CNBC markets, 2020). However, the virus is also a chance to re-shape tourism towards the 17 sustainable development goals for the 2030 Agenda (UNWTO, 2020c).

3.2.8 Political dimension. The COVID-19 outbreak has forced governments to impose stringent measures in a bid to stop the spread of the virus. According to UNWTO (2020c), all governments have imposed some type of travel restriction, such as full or partial border closure for incoming travellers, cancellation of international flight operations, ban on entry of incoming tourists from the most affected countries and strict visa controls on entry and a commitment from tourists to self-isolate for 14-days (UNWTO, 2020d). More than 100 countries have declared a state of emergency and empowered governments to derogate rights and establish new policies (Baum and Hai, 2020; German Institute for Global and Area Studies, 2020; Verfassungsblog, 2020). Some countries have experienced dysfunctions in freedom of the press leading to a "pandemic of misinformation" and an increase in political conspiracy theories behind the statistics of COVID-19 infections (UN News, 2020).

4. Crisis management strategies for coping with COVID-19

After examining the impacts of a disruptive event like the COVID-19 pandemic, this section details the success or failure of actions implemented by different countries, before moving on to analyse crisis phases and management strategies from a resilient perspective.

4.1 Success and failure of COVID-19 crisis management in different countries

Most countries showed two main types of reactions when faced with the COVID-19 pandemic (ABC News, 2020; Baniamin *et al.*, 2020). Countries such as Japan, Singapore, South Korea and New Zealand successfully handled the pandemic by implementing preventive measures; and countries such as the UK, the USA, Spain, Italy, France and Iran, followed a less successful mitigation strategy and only after the outbreak was widespread.

Several issues help us to understand the reactions of different countries when faced with the outbreak. Germany dealt with the outbreak faster than other countries by detecting cases at an early stage and applying timely social distancing and quarantine rules. It also has a better health-care system with more protective gear and ventilators. Some developed countries made use of technology for tracking infected people and for data analytics. Asian countries implemented additional measures against the outbreak learning from their previous experience with SARS. In addition, Asian cultures are not inclined to be social, this means that many already practice social distancing. People in Scandinavian countries and Germany tend to live alone at an earlier age and this may contribute to lower levels of contagion. In contrast, the Mediterranean and Latin countries are used to close social contact and families tend to be multi-generational, facilitating the spread of the virus between younger and older generations (Baniamin *et al.*, 2020; The Conversation, 2020). It is interesting to note that totalitarian countries did not benefit from their governments' strict measures, as institutional trust plays an important role and people obey only when they trust their politicians (Vox, 2020).

4.2 Phases of crisis management needed to reset tourism after COVID-19

Management of the COVID-19 pandemic is considered a disaster as the implementation of crisis management strategies during the outbreak were often confusing (Zenker and Kock, 2020). To address a crisis effectively, using strategic management techniques is imperative (Wen *et al.*, 2020). As regards tourism, an optimal strategy involves focusing on the positive impacts of the outbreak (Boğan *et al.*, 2020). There were some previous signs that alerted the possibility of a global outbreak (Gössling *et al.*, 2020; Wen *et al.*, 2020), anticipating a "perfect storm" (Hall, 2015). Despite these warnings, the current impacts on psychological, health care, social, economic, cultural, technological, environmental and political dimensions have brought unexpected consequences, as mentioned above.

An extensive body of literature has described the phases of crisis management in tourism. According to Sigala (2020), crisis management should tackle disruptive events at three stages: before, during and after. In this way, in the case of the tourism industry, stakeholders can react, recover and reset tourism through a new approach to face upcoming crises and bearing in mind past disruptive events. Ritchie and Jiang (2019), claim that all crises and disaster management models in tourism analysed from 1960 to 2018 share these three stages: preparedness and planning, response and recovery and resolution and feedback. The first stage highlights the importance of implementing a proactive, rather than a reactive approach. Many researchers have paid special attention to the second stage (Campiranon and Scott, 2014; Cooper, 2005; Durocher, 1994; Leslie and Black, 2005; Mansfeld, 1999; Pizam, 1999; Sharpley and Craven, 2001; Stafford et al., 2002), which evidences the increasing need to chase "normalcy" after any crisis. Key aspects of this phase are government financial assistance, communication among stakeholders and marketing strategies. The third and final stage relates to long-term planning and learning from the past to be prepared for future crises. Ritchie and Jiang (2019) emphasized the importance of joint efforts between researchers and governments to turn theory into practical outcomes. All crisis management tools and models must be directed towards a decision-making process for successful development at local, regional and international levels (Faulkner, 2001; Okuyama, 2018; Ritchie, 2009). As demonstrated and in line with the approach taken in this paper, complexity and chaos theory may help to analyse and understand complex systems such as tourism at all stages of a crisis (Ritchie, 2004; Ritchie and Jiang, 2019).

Resilience is highly connected to crisis management. The way how to progress over any disruptive event suggests a sequence of stages through a cycle model (Lew et al., 2020): the collapse of the system, re-organization, growth and consolidation. In this resilience cycle, stages create a loop that evolves and is updated with each disruptive event's adaptive changes. The next paragraph analyses the phases of a resilience cycle in the specific case of the COVID-19 pandemic.

During the pandemic, the collapse phase meant implementing urgent measures such as social distancing, lockdown, curfews and the closure of the hospitality industry, the food and beverage sector, shops and borders. Rigorous measures of surveillance and control were implemented as saving lives became the foremost priority (Assaf and Scuderi, 2020; Brouder et al., 2020; Lew et al., 2020). The re-organization phase involves reorganizing the world system and re-allocating resources. Here, the ability to innovate and be creative are key to succeeding in the tourism industry and other sectors of the economy. In this phase, social media brings people and communities together. Solidarity becomes visible within communities eager to support local businesses. Government-backed rescue packages, interest-free or guaranteed loans and non-refundable subsidies are proactive measures to handle chaos (Assaf and Scuderi, 2020; Brouder et al., 2020; Lew et al., 2020; Martínez-Román et al., 2015). Growth is the third phase and involves raising community well-being to an acceptable standard and takes place when people's economic situation improves. Growth implies restoring local markets, reviving the destination cultural heritage and easing visa regulations (Assaf and Scuderi, 2020; Fakfare and Wattanacharoensil, 2020; Lew et al., 2020). Destination marketing organizations play a key role in marketing campaigns to restart tourism activity again. On a transnational level, collaboration and cooperation between countries on health care and institutional trust are a force for equity in resetting globalization (Folke et al., 2002; Lew et al., 2020; Ritchie and Jiang, 2019; Romagosa, 2020; Zenker and Kock, 2020). The fourth phase, consolidation, implies long-term responsibility resulting from transformational learning. A long-term transition scenario involves preparing consumers towards a responsible tourism experience and encouraging them to commit to values such as fairness, global awareness and collective engagement and to new sustainable patterns of consumption. Leaders need to establish agendas for change, take action to guarantee cleaner energy and a greener, balanced economy and to promote more

sustainable tourism development as a business investment (Hall, 2015; Lew *et al.*, 2020; Romagosa, 2020). In the long run, companies that incorporate environmental strategies as part of their business take more competitive decisions. Fostering slow tourism and smart tourism gives the tourism industry an advantage, making it more resilient when faced with future crises (Ioannides and Gyimóthy, 2020; Iovino, 2019; Sigala, 2020; Wen *et al.*, 2020).

5. Towards an integrative conceptual model

This section summarizes the main ideas in the previous two sections into a conceptual model with which to better understand the impacts of disruptive events in tourism and how they can be tackled by a resilience cycle model (Figure 1).

Tourism has proved to be a resilient industry; thus, a forward-looking perspective should be adopted (Ritchie and Jiang, 2019) to reset the industry in the post-COVID era. Crises affect people on an individual, collective and institutional level. The individual dimension refers to the psychological impacts on individuals, either tourists or residents. The collective level constitutes the tourism and hospitality organizations, in which there are social, economic, cultural, environmental and technological impacts. The institutional level includes governments and destination marketing & management organizations with political and healthcare impacts derived from the COVID-19 outbreak. These impacts on the three dimensions contribute to the complexity of a disruptive event as the interaction between the different dimensions has unexpected effects. As explained in Section 4, the resilience cycle includes four stages of crisis management: collapse, reorganization, growth and consolidation (Lew *et al.*, 2020), each one with a set of measures to be implemented and stakeholders that need to be involved.

The impacts on the three dimensions are distributed throughout the four phases of the resilience cycle. These evolve unpredictably depending on the measures implemented in each of the crisis management phases (Lew *et al.*, 2020). This research suggests that the

Figure 1	Resilience cycle and impact model for a complex disruptive event in tourism

Source: Own elaboration, from Lew *et al.* (2020) and McKercher (1999)
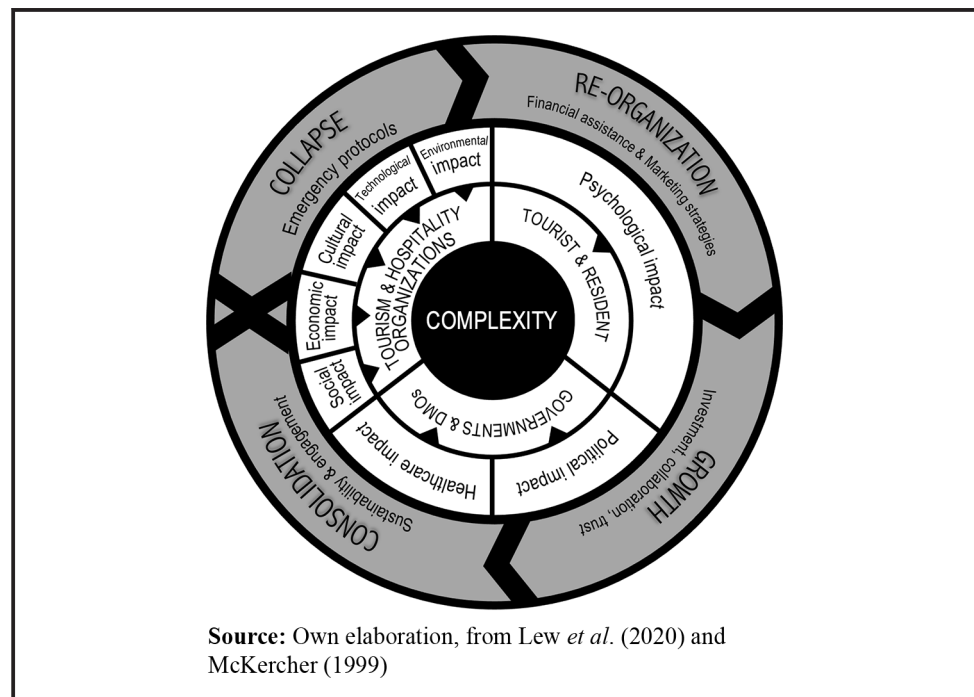
interaction between "impacts" and "solutions" entails complex scenarios for the management of the crisis, with unexpected consequences for tourism systems.

6. Final remarks

Research on complex systems in tourism is underdeveloped despite its potential to shed light on the issue of crisis in tourism. Researchers should be particularly interested in understanding how complex systems evolve and to what extent it is possible to manage and eventually mitigate their impacts, which is the gap addressed in this paper.

The main crises which have impacted tourism most severely during the twenty-first century are identified: the 2001 terrorist attacks, the 2003 SARS outbreak, the 2008–2009 financial crisis and the COVID-19 outbreak. These events have had varied impacts on the tourism industry, the COVID-19 pandemic being the most devastating. The impacts of the COVID-19 pandemic outbreak have been summarized into a number of categories or dimensions, all of which add different levels of complexity, whether alone or through their interaction and lead to unprecedented scenarios.

Regarding response measures in the face of disruptive events and crisis in tourism, a four-stage resilience cycle provides an understanding of how destinations evolve and enables us to contextualize the strategies implemented in relation to the impacts mentioned above (Lew *et al.*, 2020). Both impact dimensions and resilience models constitute an integrative conceptual model. This may still not be the solution to unbundle complexity in tourism systems, yet it facilitates an understanding of how complex systems in tourism operate, particularly during a disruptive event.

The COVID-19 pandemic has shown itself to be a different type of crisis compared to previous ones, thus new tools and methods are required to overcome it. Future research could address the issue of complexity derived by disruptive events in tourism by empirically testing this model in different crisis events, as well as different territorial settings and organizational contexts. The focus could be put on how destinations can recover faster from a disruptive event by improving health, safety and security issues (Assaf and Scuderi, 2020; Rahman *et al.*, 2020; Rittichainuwat and Chakraborty, 2009), by outlining the role of different stakeholders play during and after the crisis and also showing how the destination image of different countries has changed for better or worse due to the pandemic (The Conversation, 2020; Zenker and Kock, 2020). This research also has the potential to open new avenues of research which apply complexity theory to tourism.

References

ABC News (2020), "Coronavirus data shows which countries have it under control. What did they do right?", Australian Broadcasting Corporation, available at: https://mobile.abc.net.au/news/2020-03-26/coronavirus-covid19-global-spread-data-explained/12089028?nw=0&pfmredir=sm (accessed 15 September 2020).

Assaf, A. and Scuderi, R. (2020), "COVID-19 and the recovery of the tourism industry", *Tourism Economics*, pp. 1-3.

Baggio, R. (2008), "Symptoms of complexity in a tourism system", *Tourism Analysis*, Vol. 13 No. 1, pp. 1-20.

Baggio, R. (2017), "Network science and tourism – the state of the art", *Tourism Review*, Vol. 72 No. 1, pp. 120-131.

Baggio, R. (2019), "The science of complexity in the tourism domain: a perspective article", *Tourism Review*, Vol. 75 No. 1, pp. 16-19.

Baniamin, H.M., Rahman, M. and Hasan, M.T. (2020), "The COVID-19 pandemic: why are some countries coping more successfully than others?", *Asia Pacific Journal of Public Administration*, Vol. 42 No. 3, pp. 1-17.

Baum, T. and Hai, N.T.T. (2020), "Hospitality, tourism, human rights and the impact of COVID-19", *International Journal of Contemporary Hospitality Management*, Vol. 32 No. 7, pp. 2397-2407.

BBC (2020), "Virtual worlds: can we travel without travelling?", available at: www.bbc.com/travel/story/20200330-covid-19-virtual-travel-during-coronavirus (accessed 20 April 2020).

Boğan, E., Dedeoğlu, B.B. and Dedeoğlu, S.B. (2020), "The effect of residents' perception of hotel social responsibility on overall attitude toward tourism", *Tourism Review*.

Brouder, P., Teoh, S., Salazar, N.B., Mostafanezhad, M., Pung, J.M., Lapointe, D. and Clausen, H.B. (2020), "Reflections and discussions: tourism matters in the new normal post COVID-19", *Tourism Geographies*, pp. 1-12.

Buhalis, D. (2019), "Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article", *Tourism Review*, Vol. 75 No. 1, pp. 267-272.

Butler, R. (1980), "The concept of a tourist area cycle of evolution: implications for management of resources", *The Canadian Geographer/Le Géographe Canadien*, Vol. 24 No. 1, pp. 5-12.

Butler, R. (2004), "The tourism area life cycle in the twenty-first century", *A Companion to Tourism*, pp. 159-169.

Campiranon, K. and Scott, N. (2014), "Critical success factors for crisis recovery management: a case study of Phuket hotels", *Journal of Travel & Tourism Marketing*, Vol. 31 No. 3, pp. 313-326.

CNBC markets (2020), "Coronavirus could weaken climate change action and hit clean energy investment, researchers warn", available at: www.cnbc.com/2020/03/13/coronavirus-could-weaken-climate-change-action-hit-clean-energy.html (accessed 13 May 2020).

Cooper, M. (2005), "Japanese tourism and the SARS epidemic of 2003", *Journal of Travel & Tourism Marketing*, Vol. 19 Nos 2/3, pp. 117-131.

Council of Europe (2020), "Covid-19. How to explore art and culture and heritage of Europe from home", available at: www.coe.int/en/web/culture-and-heritage/access-to-culture-during-covid-19 (accessed 20 May 2020).

Douglas, M., Katikireddi, S.V., Taulbut, M., McKee, M. and McCartney, G. (2020), "Mitigating the wider health effects of COVID-19 pandemic response", *BMJ*, Vol. 369.

Dumazedier, J. (1974), *Sociology of Leisure*, Elsevier Scientific Publ. Co.

Durocher, J. (1994), "Recovery marketing what to do after a natural disaster", *The Cornell Hotel and Restaurant Administration Quarterly*, Vol. 35 No. 2, pp. 66-70.

European Travel Commission (2005), City tourism & culture: the European experience, World Tourism Organization (WTO).

Everingham, P. and Chassagne, N. (2020), "Post COVID-19 ecological and social reset: moving away from capitalist growth models towards tourism as Buen Vivir", *Tourism Geographies*, Vol. 22 No. 3, pp. 1-12.

Fakfare, P. and Wattanacharoensil, W. (2020), "Impacts of community market development on the residents' well-being and satisfaction", *Tourism Review*.

Farrell, B.H. and Twining-Ward, L. (2004), "Reconceptualizing tourism", *Annals of Tourism Research*, Vol. 31 No. 2, pp. 274-295.

Faulkner, B. (2001), "Towards a framework for tourism disaster management", *Tourism Management*, Vol. 22 No. 2, pp. 135-147.

Faulkner, B. and Russell, R. (1997), "Chaos and complexity in tourism: in search of a new perspective", *Pacific Tourism Review*, Vol. 1 No. 2, pp. 93-102.

Financial Times (2010), "Not so rare: was the crisis a black swan event?", available at: www.ft.com/content/6b4879ec-7d1e-11df-8845-00144feabdc0 (accessed 07 December 2020).

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S. and Walker, B. (2002), "Resilience and sustainable development: building adaptive capacity in a world of transformations", *AMBIO: A Journal of the Human Environment*, Vol. 31 No. 5, pp. 437-440.

Forbes (2020a), "The approaching coronavirus debt crisis: how excessive debt reduces economic growth", available at: www.forbes.com/sites/mikepatton/2020/04/28/the-approaching-covid-19-debt-crisis-how-excessive-debt-reduces-economic-growth/ (accessed 20 May 2020).

Forbes (2020b), "How virtual reality could help the travel & tourism industry in the aftermath of the coronavirus outbreak", available at: www.forbes.com/sites/solrogers/2020/03/18/virtual-reality-and-tourism-whats-already-happening-is-it-the-future/#1395e8b28a6a (accessed 20 April 2020).

Galvani, A., Lew, A.A. and Perez, M.S. (2020), "COVID-19 is expanding global consciousness and the sustainability of travel and tourism", *Tourism Geographies*, Vol. 22 No. 3, pp. 1-10.

German Institute for Global and Area Studies (2020), "Assessing the political and social impact of the COVID-19 crisis in latin america", available at: www.giga-hamburg.de/en/publication/assessing-the-political-and-social-impact-of-the-covid-19-crisis-in-latin-america (accessed 20 May 2020).

Gössling, S., Scott, D. and Hall, C.M. (2020), "Pandemics, tourism and global change: a rapid assessment of COVID-19", *Journal of Sustainable Tourism*, pp. 1-20.

Hall, C.M. (2015), "The coming perfect storm: Medical tourism as a biosecurity issue", *Handbook on Medical Tourism and Patient Mobility*, Edward Elgar Publishing.

Hall, C.M. and Butler, R.W. (1995), "In search of common round: reflections on sustainability: complexity and process in the tourism system: a discussion", *Journal of Sustainable Tourism*, Vol. 3 No. 2, pp. 99-105.

Higgins-Desbiolles, F. (2020), "Socialising tourism for social and ecological justice after COVID-19", *Tourism Geographies*, Vol. 22 No. 3, pp. 1-14.

Ioannides, D. and Gyimóthy, S. (2020), "The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path", *Tourism Geographies*, Vol. 22 No. 3, pp. 1-9.

Iovino, F. (2019), "Profitability structure of travel agencies and tour operators during ten years", *12th Annual Conference of the EuroMed Academy of Business*.

Leslie, D. and Black, L. (2005), "Tourism and the impact of the foot and mouth epidemic in the UK: reactions, responses and realities with particular reference to Scotland", *Journal of Travel & Tourism Marketing*, Vol. 19 Nos 2/3, pp. 35-46.

Lew, A.A., Cheer, J.M., Haywood, M., Brouder, P. and Salazar, N.B. (2020), "Visions of travel and tourism after the global COVID-19 transformation of 2020", *Tourism Geographies*, Vol. 22 No. 3, pp. 1-12.

Loorbach, D., Frantzeskaki, N. and Avelino, F. (2017), "Sustainability transitions research: transforming science and practice for societal change", *Annual Review of Environment and Resources*, Vol. 42 No. 1.

McKercher, B. (1999), "A chaos approach to tourism", *Tourism Management*, Vol. 20 No. 4, pp. 425-434.

MacCannell, D. (2003), *El Turista: una Nueva Teoría de la Clase Ociosa*, Melusina, Madrid.

Mansfeld, Y. (1999), "Cycles of war, terror, and peace: determinants and management of crisis and recovery of the Israeli tourism industry", *Journal of Travel Research*, Vol. 38 No. 1, pp. 30-36.

Martínez-Román, J.A., Tamayo, J.A., Gamero, J. and Romero, J.E. (2015), "Innovativeness and business performances in tourism SMEs", *Annals of Tourism Research*, Vol. 54, pp. 118-135.

Melly, D. and Hanrahan, J. (2020), "Tourism biosecurity risk management and planning: an international comparative analysis and implications for Ireland", *Tourism Review*, Vol. 76 No. 1.

NASA Earth Observatory (2020), "Airborne nitrogen dioxide plummets over China", available at: https://earthobservatory.nasa.gov/images/146362/airborne-nitrogen-dioxide-plummets-over-china (accessed 13 May 2020).

National Geographic (2020), "Barcelona goes from overtourism to no tourism", available at: www.nationalgeographic.com/travel/2020/04/coronavirus-barcelona-goes-from-overtourism-to-no-tourism/ (accessed 18 May 2020).

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C. and Agha, R. (2020), "The socio-economic implications of the coronavirus pandemic (COVID-19): a review", *International Journal of Surgery (Surgery)*, Vol. 78, p. 185.

Okuyama, T. (2018), "Analysis of optimal timing of tourism demand recovery policies from natural disaster using the contingent behavior method", *Tourism Management*, Vol. 64, pp. 37-54.

Pizam, A. (1999), "A comprehensive approach to classifying acts of crime and violence at tourism destinations", *Journal of Travel Research*, Vol. 38 No. 1, pp. 5-12.

Rahman, M.S., Fattah, F.A.M.A., Hussain, B. and Hossain, M.A. (2020), "An integrative model of consumer-based heritage destination brand equity", *Tourism Review*, Vol. 76 No. 2.

Reuters (2020), "Discarded coronavirus masks clutter Hong Kong's beaches, trails", available at: www.reuters.com/article/us-health-coronavirus-hongkong-environme/discarded-coronavirus-masks-clutter-hong-kongs-beaches-trails-idUSKBN20Z0PP (accessed 13 May 2020).

Ritchie, B.W. (2004), "Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry", *Tourism Management*, Vol. 25 No. 6, pp. 669-683.

Ritchie, B.W. (2009), *Crisis and Disaster Management for Tourism*, Channel View Publications.

Ritchie, B.W. and Jiang, Y. (2019), "A review of research on tourism risk, crisis and disaster management: launching the annals of tourism research curated collection on tourism risk, crisis and disaster management", *Annals of Tourism Research*, Vol. 79, p. 102812.

Rittichainuwat, B.N. and Chakraborty, G. (2009), "Perceived travel risks regarding terrorism and disease: the case of Thailand", *Tourism Management*, Vol. 30 No. 3, pp. 410-418.

Romagosa, F. (2020), "The COVID-19 crisis: opportunities for sustainable and proximity tourism", *Tourism Geographies*, pp. 1-5.

Russell, R. (2005), "Chaos theory and its application to the tourism area life cycle model", in Butler R.W. (Ed.), *The Tourism Area Life Cycle, Vol. 2: Conceptual and Theoretical Issues*, Channel View Publications, Clevedon, pp. 164-180.

Russell, R. and Faulkner, B. (2004), "Entrepreneurship chaos, and the tourism area lifecycle", *Annals of Tourism Research*, Vol. 31 No. 3, pp. 556-579.

Sharpley, R. and Craven, B. (2001), "The 2001 foot and mouth crisis–rural economy and tourism policy implications: a comment", *Current Issues in Tourism*, Vol. 4 No. 6, pp. 527-537.

Sigala, M. (2020), "Tourism and COVID-19: impacts and implications for advancing and resetting industry and research", *Journal of Business Research*, Vol. 117.

Stafford, G., Yu, L. and Armoo, A.K. (2002), "Crisis management and recovery: how Washington, DC, hotels responded to terrorism", *Cornell Hospitality Quarterly*, Vol. 43 No. 5, p. 27.

Sułkowski, Ł. (2020), "Covid-19 pandemic; recession, virtual revolution leading to de-globalization?", *Journal of Intercultural Management*, Vol. 12 No. 1, pp. 1-11.

Taleb, N.N. (2007), *The Black Swan: The Impact of the Highly Improbable*, Vol. 2, Random house.

The Conversation (2020), "5 Reasons the coronavirus hit Italy so hard", available at: https://theconversation.com/5-reasons-the-coronavirus-hit-italy-so-hard-134636 (accessed 13 September 2020).

The Heritage Foundation (2020), "COVID-19 crisis has re-ignited a sense of community, charity and personal responsibility", available at: www.heritage.org/civil-society/commentary/covid-19-crisis-has-re-ignited-sense-community-charity-and-personal (accessed 26 May 2020).

The New York Times (2004), "Learning to learn the unexpected", available at: www.nytimes.com/2004/04/08/opinion/learning-to-expect-the-unexpected.html (accessed 07 December 2020).

The New Yorker (2020), "The pandemic isn't a black swan but a portent of a more fragile global system", available at: www.newyorker.com/news/daily-comment/the-pandemic-isnt-a-black-swan-but-a-portent-of-a-more-fragile-global-system (accessed 22 May 2020).

UN News (2020), "Press freedom critical to countering COVID-19 'pandemic of misinformation': UN chief", available at: https://news.un.org/en/story/2020/05/1063152 (accessed 20 May 2020).

United Nations Conference on Trade and Development (2020), "Environmental impacts of coronavirus crisis, challenges ahead", available at: https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2333 (accessed 14 May 2020).

UNWTO (2019), "Panorama del turismo internacional. Edición 2019", available at: www.e-unwto.org/doi/pdf/10.18111/9789284421237 (accessed 15 May 2020).

UNWTO (2020a), "Impact assessment of the COVID-19 outbreak on international tourism. Updated may 2020", available at: www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism (accessed 12 May 2020).

UNWTO (2020b), "COVID-19 response: 96% of global destinations impose travel restrictions, UNWTO reports", available at: www.unwto.org/news/covid-19-response-travel-restrictions (accessed 12 May 2020).

UNWTO (2020c), "Supporting jobs and economies through travel & tourism – a call for action to mitigate the socio-economic impact of COVID-19 and accelerate recovery", available at: www.e-unwto.org/doi/pdf/10.18111/9789284421633 (accessed 12 May 2020).

UNWTO (2020d), "100% of global destinations now have COVID-19 travel restrictions, UNWTO reports", available at: www.unwto.org/news/covid-19-travel-restrictions (accessed 15 May 2020).

Verfassungsblog (2020), "The state of emergency virus", available at: https://verfassungsblog.de/the-state-of-emergency-virus/ (accessed 20 May 2020).

Vox (2020), "How Spain's coronavirus outbreak got so bad so fast - and how Spaniards are trying to cope", available at: www.vox.com/2020/3/20/21183315/coronavirus-spain-outbreak-cases-tests (accessed 12 June 2020).

Wen, J., Kozak, M., Yang, S. and Liu, F. (2020), "COVID-19: potential effects on Chinese citizens' lifestyle and travel", *Tourism Review*, Vol. 76 No. 1.

WHO (2020a), "Digital technology for COVID-19 response", available at: www.who.int/news-room/detail/03-04-2020-digital-technology-for-covid-19-response (accessed 20 April 2020).

WHO (2020b), "Operational considerations for COVID-19 management in the accommodation sector", available at: https://apps.who.int/iris/bitstream/handle/10665/331638/WHO-2019-nCoV-Hotels-2020.1-eng.pdf (accessed 23 April 2020).

World Economic Forum (2020), "These new gadgets were designed to fight COVID-19", available at: www.weforum.org/agenda/2020/04/coronavirus-covid19-pandemic-gadgets-innovation-technology/ (accessed 20 April 2020).

Zenker, S. and Kock, F. (2020), "The coronavirus pandemic–a critical discussion of a tourism research agenda", *Tourism Management*, Vol. 81, p. 104164.

Zurich (2020), "The human consequences of COVID 19's interconnected risks", available at: www.zurich.com/en/knowledge/topics/covid-19/the-human-consequences-of-covid-19s-interconnected-risks (accessed 12 May 2020).

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