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EXPLORING THE ATTRIBUTES OF EVENT RESILIENCE: A CONTENT CASE OF ACADEMIC EVENTS

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The resilience of events has been primarily entangled to the recovery and coping capacity of the host destination. This approach considers events to be destination dependent, omitting sufficient consideration on an event's internal systemic dynamics that dictate its inherent self-organizing and adapting capacity to externalities at operational level. This study adopts a systems thinking approach to explore the dynamic interface of interacting elements, attributes, and actors that dictate an event's identity, structure, and behavior, as grounding foundations of its operational resilience independently to the hosting destination. Resilience thinking has been employed through the exploration of the seven principles of socioecological systems (SES) resilience. Building on the contextualization of academic events, the study applied a qualitative research design to explore perceptions, attitudes, and experiences of primary academic event stakeholders (participants, attendees, keynotes, members of event academic committee, and members of event organization) during the period of COVID-19 pandemic. Research findings contribute to the conceptualization and operationalization of operational academic and business event resilience, through the identification of enablers and inhibitors from the perspective of primary stakeholders. From a managerial perspective, research findings inform event contingencies and management during times of system disturbance with the aim to ensure event viability and multistakeholder value satisfaction.

Key words: Event resilience; System thinking; Academic events; Complex adaptive systems; Uncertainty

Introduction

Over the years, the event sector has been at the forefront of experiencing the implications of crises and turbulence at the hosting destinations. The extent, duration, and severity of these implications have manifested in the viability of events and their adapting ability to address externalities and bounce forward in the face of adversity and uncertainty (Getz & Page, 2016b). To date, the majority of studies prioritize the socioeconomic value of events and strongly attach their resilience to the

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recovery of the destination and the cooping ability of the stakeholders responsible for their delivery and organization (Getz & Page, 2016a; Spracklen & Lamond, 2016). This approach assumes that events are primarily destination dependent (Getz & Page, 2016b), omitting an exploration of the particularities of online or hybrid events that prevailed during the recent pandemic and are destination independent by nature. This unprecedented reality of online and hybrid events offers the optimum setting for the exploration of event-specific attributes that enhance or hinder its operational resilience by disassociating it from destination recovery. The contribution of this article lies on the exploration of internal and intrinsic systemic dynamics that dictate an event's responding and adapting behavior to an externality at an operational level, which is independent to the recovery process of the destination and to the best of the author's knowledge remain still unexplored.

More specifically, this study adopts a systems thinking approach to explore the dynamic interface of interacting elements, attributes, and actors that dictate an event's identity, structure, and behavior, as grounding foundations of its operational resilience. Systems Theory was introduced by Ludwig Von Bertalanffy in 1950 to advance the understanding that a whole (a system) is greater than the sum of its parts and that achieving a system equilibrium entails its ability to self-organize, adapt, and evolve (Meadows, 2008). Within these research boundaries, resilience is beyond the capacity of a system to return to its initial prior perturbation state. Instead, it is conceptualized as the capacity of a system to absorb disturbance and bounce forward by encompassing internal dynamic processes that dictate its changing and responding process (Biggs et al., 2012). The concepts of system adaptability and transformability are thus core to resilience thinking.

In times of uncertainty systems tend to move into chaordic states of behavior (Pappas & Glyptou, 2021). From an epistemological perspective, systems theory is most appropriate to address the complexity of dynamic systemic interactions during times of uncertainty with high degree of unpredictability (Sterman, 1994). Under the shortcomings of linear cause–effect approaches, systems theory enables the exploration of the dynamically emerging structures of pattern configurations entailed by the self-organized network of feedbacks and trade-offs that define a system's stability, resilience, adaptation and transformation capacity (Meadows, 2008). The understanding of systemic pattern configurations at times of turbulence presupposes the sound contextual identification system attributes, facets, and actors as well the interlinkages that dictate a system's structure and behavior.

System and resilience thinking have not been extensively adopted in the events industry. This article proposes an exploration of both concepts in the context of academic events (e.g., academic conferences and symposiums). Academic events are a special category of business events, focused around the knowledge production process of individual scholars (Hansen et al., 2020). In the majority of cases, academic events are not destination attached but instead comprised of a number of attributes (e.g., academic representation, industry collaboration, networking opportunities) and stakeholders with a varying degree of involvement (e.g., participant, attendee, accompanying person, organizer). The unprecedented circumstances of the recent pandemic resulted in a shift of most academic events completely online or to a hybrid structure. These new modes of delivery offer an optimum setting to explore the multivariate and multilayered event system dynamics from the perspective of operational resilience detached from the host destination, particularly when adopting an online format. Data were collected from academics in the field of hospitality and tourism who attended sector academic events online or in hybrid format during the period of the pandemic. The process was effectuated through a structured qualitative research on the various categories of academic event stakeholders during November–December 2021. The article aims to primarily offer an empirically grounded exploration of resilience thinking in the events sector and as such contribute to the theoretical underpinnings of the concept around enablers and inhibitors of operational event resilience. From a managerial perspective, the research aims to inform event design and innovation to enhance event contingency planning and management for the operational resilience of academic and business events in an ever-changing world.

Resilience Thinking in Events

Resilience thinking encompasses the dynamic and complex synergies between the parts of a system (Folke et al., 2010). The term was first introduced in reference to the ecosystem services of socioecological systems (SES) but has been since adopted in the broader context of systems theory. Systems theory, first coined by von Bertalanffy (1950), conceptualized a system as far greater than the sum of its parts, to encompass the dynamic interacting and interconnected elements that give the system a function and purpose. In that regard, systems often exhibit self-organizing, adaptive, and even evolutionary behaviors (Meadows, 2008). In light of complexity and uncertainty, systems theory focuses on the study of feedback loops that enable or inhibit the ability of a system to reach a dynamic and self-regulating state of system equilibrium (Baggio, 2020). Complex systems are primarily open systems governed by multilayered processes at micro-, meso-, and macrolevel (Schneider, 2012). System thinking refers to the application of systems theory in combining nonlinear, analytical, and synthetical facets of thinking: a system is deconstructed to its components during analysis, while its behavioral patterns are emerging during synthesis. The event delivery, similar to other service provisions, shares structural, functional, and behavioral characteristics of complex systems due to the nonlinearity of relations between its components and their aggregating in dynamic nonpredictable ways (Gharajedaghi, 2011). In extending Balague et al.'s (2013) conceptualization, complex systems in event organization and delivery range from individual participants to groups of exhibitors or service providers composed of heterogeneous units (structural or functional) that interact with each other through changing intensities and across separated spatiotemporal scales. Interactions can be both formal and informal and extend from the planning stage till the completion of the delivery of an event (Allen, 2010). In that regard, the event system is adaptive and purpose driven with its structural and functional units acting as agents that modify their behavior to overcome emerging challenges to achieve system viability, equilibrium, and purpose (or service) delivery.

Within the context of a system, Folke et al. (2010) had defined resilience as its capacity to "absorb disturbance and re-organise while undergoing change, so as to still retain essentially the same function, structure and feedbacks, and therefore identity, that is, the capacity to change in order to maintain the same identity" (p. 3). Resilience was thus strongly interrelated to the concepts of a system's adaptability and transformability within a system's critical thresholds. Even if often misassociated with a system's persistence to external perturbations, resilience does not merely reflect its return rate to a predisturbance equilibrium but rather a system's ability to bounce forward and move into new thresholds of stability and improved functionality (Elmqvist et al., 2019). Hence, the essence of resilience thinking is to account for the inherent nature of systems to dynamically and continuously change and move into improved states of equilibrium over time (Scheffer et al., 2009). Resilience, adaptability and transformability interrelate across the multiple layers, scales, as well as functional and structural units of a system. On one hand, adaptability captures a system's capacity to learn, combine experience and knowledge, and adopt its responses to changing external drivers and internal processes, thus to continue and support development within the current equilibrium (Folke et al., 2010). Transformability, on the other, reflects its capacity to cross thresholds into new development equilibriums when the external disturbances make the existing system untenable (Walker & Salt, 2006). Transformational change at smaller scales nurtures system resilience at larger scales (Holling, 1986). In that regard, external disturbances and system perturbations in the form of crises offer opportunities for system innovation and novelty, and for reassessing and reinventing information sources to navigate through system transitions.

To advance further research on ecosystem service resilience in the face of disturbance and ongoing change Biggs et al. (2012) identified seven generic policy-relevant principles that conceptualize the enhancement of resilience within the SES. These are: maintain diversity and redundancy [P1]; manage connectivity [P2]; manage slow variables and feedbacks [P3]; foster complex adaptive system (CAS) thinking [P4]; encourage learning and experimentation [P5]; broaden participation [P6];

and promote polycentric governance systems [P7]. Considering the fundamental principles of system thinking, all seven principle are co-occurring and highly interdependent. Still there is a need to explore and understand their interdependencies and to operationalize them within different policy and management contexts (Biggs et al., 2012). The recognition of event organization and delivery as an open system of multilayered interactions between its structural, functional, and operational units offers an interesting ground for the exploration of the application of resilience thinking along the seven principles of resilience.

The first principle of *Maintaining System Diversity and Redundancy* [P1] addresses system complementarity as in the assurance that certain system components or units could compensate for the inadequacy or failure of others, hence supporting a faster system recovery in the face of adversity (Walker & Salt, 2012). Diversity in this context encompasses the attributes of variety, balance, and disparity among system components (Stirling, 2007). Redundancy is closely related to diversity yet refers primarily to the replication of particular components or system pathways (Rosenfeld, 2002). In fact, the higher the diversity and distinctiveness of system components the stronger its redundancy due to the variant timing and type of response to disturbance. Response diversity thus entails the variety of ways and trajectories that systems' actors and elements respond to disturbance, whereas functional redundancy refers to their functional capacity to partly or fully substitute for each other (Biggs et al., 2015).

In the context of event delivery, the response diversity may encompass the variety of responses from the multiple actors involved, their importance, power, and scale of influence, which is often dependent on their role and contribution (Westley et al., 2013). For academic events, this could reflect, for instance, the roles of the scientific versus the organizing committee who have different responsibilities in terms of event delivery, with the first having event ownership and being concerned with event over time legacy while the latter being primarily concerned with one-off delivery challenges (Gross & Fleming, 2011). Academic event stakeholders (actors) may provide complementary and even overlapping functions through divergent trajectories and different strengths and contribution. Functional redundancy thus allows for the necessary response diversification that reduces the risk of complete system failure by reducing the possibility of a particular disturbance to horizontally, homogeneously, and simultaneously impact all system components (Biggs et al., 2012).

The *Principle of Systems Connectivity* [P2] focuses on the structure and strength of resources' and actors' interactions across the SES domains (Bodin & Prell, 2011). System connectivity is associated with both the speed and spread of change and thus disturbance across a system. In fact, the effect of connectivity on resilience is subject to the structure and strength of linkages between a system's components. Well-connected systems can overcome and recover from disturbances more quickly, but overly connected systems may lead to the rapid spread of disturbances across the entire system so that all components/actors are impacted (Dakos, et al., 2015). Systems' connectivity when applied along network theory in the context of event organization and delivery may enhance resilience through governance and management opportunities. High connectivity between actors facilitates information and knowledge sharing and develops trust and reciprocity, which are essential in times of uncertainty. In the context of academic events, ensuring high connectivity as building consensus on expectations and commitment to quality standards between the scientific and organizing committee ensures trust and optimization of collaboration. At the same time, the diversification of event actor inputs overcomes challenges related to the homogenization of knowledge, information and resources that increase the risk of simultaneous exposure to disturbance, which hence may compromise the systems' resilience (Hall et al., 2018). The success in the mitigation of the negative implications of enhanced system connectivity lays in the identification of vulnerable system nodes/facets and their triggers (Yu et al., 2020). In principle, increased variance and heterogeneity lead to greater diversity and less dependency in the connections between nodes. This implies that the less dependency on certain actor roles and the more complementarity in their contribution results in higher flexibility and possibly creative variance in the process. Controlling overdependency of certain nodes or actors in the

case of events (e.g., service providers, keynotes, specific type of participants) safeguards the overall viability of the event system.

Systems are characterized by a certain sense of structure and order that ensures their ability to provide functional and operational services on a range of timescales. Principle three of *Managing Slow Variables and Feedbacks* [P3] of systems' configuration and functioning is achieved through the management of fundamental slow variables of system components and their feedback loops. Slow variables are often associated with a system's regulating and provisioning properties but within a social system such variables may relate to legal systems, values, or traditions (Berbés-Blázquez & Scott, 2017). In the context of academic events, this relates primarily to the academic event brand and specialization. System resilience revolves around the management challenge of identifying and monitoring the critical system thresholds after which the system requires reconfiguration, hence a change in brand, mode of delivery, or even content focus. The resilience challenge in this case revolves around the strengthening of feedbacks that maintain the desirable core functions and regimes and that support the system's reorganization into a new mode of delivery without compromising the quality experience and service value (Biggs et al., 2012).

Principle four of *Fostering Complex Adaptive Systems (CAS) Thinking* [P4] recognizes the inherent complexity of the multidimensional dynamic connections among the components and actors of a system, which goes beyond predictions of the behavior of its individual system components (Biggs et al., 2015). To understand this principle in the context of event and service delivery, it is necessary to decode the behavior and cognitive decision-making process of actors in response to internal system feedbacks and underlying uncertainty (Holling, 2001). The mere change of academic event mode of delivery towards online and hybrid structures and the unknown reactive behavior of relevant actors serves as a relevant example. The principle further recognizes that there is no defined or set solution to a problem, but it is more the process of setting acceptable thresholds and boundaries within which multiple interventions can be piloted (Bodin & Prell, 2011). This is often associated with a change in the management paradigm from a focus on causality and control, to a more encompassing approach of change and uncertainty that might prove challenging within set management objectives and rigid assessment frameworks. P4 is often the precursor of adaptive management system trajectories.

Principle five on *Encouraging Learning* [P5] reflects the need for continuous information flow through the monitoring and experimentation of system adaptation processes and appropriate management interventions. Learning refers to the process of acquiring new and modifying existing knowledge, behaviors, skills, values, and preferences (Briggs et al., 2015). The need for learning is based on the recognition that knowledge is always partial and incomplete, that change is inevitable, and that an exact system behavior cannot be fully predicted (Walker & Salt, 2012). Other than the continuous reiteration and data collection of learning by doing, monitoring and experimentation involve the active and continuous manipulation of system processes and strictures to assess potential outcomes. Within the context of event delivery, the continuous monitoring of user- and actor-generated content (e.g., through social media) enables the piloting of management interventions or service differentiations within a controlled environment (Glyptou, 2021). Management and governance structures should promote and facilitate the interaction between system actors to advance knowledge and to create communities of practice. Interestingly, the process may be subject to the limitations imposed by power dynamics in learners' relationships and traditional management biases (associated with slow variables).

Broadening Participation [P6] and active engagement of all system actors is fundamental for systems' resilience. Broad and harmonious participation of actors that represent the various facets and elements of a system builds trust and consensus among members, ensures pluralism of information sources, and reduces associated knowledge biases (Biggs et al., 2012). This reiterates the complementarity and redundancy discussed under P1. The integrative participatory approach may support the prioritization of management interventions and the better calibration of the severity and extent of the systemic impact associated with external perturbations (Hall et al., 2018). Participation, if not

supported by balanced power relations, might result into competition and conflict. Comanagement where participation includes little authority, but much responsibility, may degrade both resilience and the ability of the system to deliver its services (Cheer & Lew, 2018). Successful participation in the context of the event management (from planning to delivery) should include increased levels of cooperation around clear goals, expectations, and purpose, a shared commitment against core values, increased transparency through greater sharing of information that directly informs decision making and management decisions (Meadows, 2008).

The last Principle seven of *Promoting Polycentric Governance* [P7] fosters collective action among multiple governing bodies with the aim to make and enforce decisions at different scales (Walker & Salt, 2006). Governance refers to the exercise of deliberation among actors with various levels and sources of authority around specific nodes and facets of the system. Polycentric systems maintain the autonomy of domain, function, or spatial scale, yet they interconnect both horizontally and vertically to other system units (Folke et al., 2007). Still, the key success factor for polycentricity is the matching of governance to the scale of the problem in order to best capitalize on scale-specific information (e.g., local knowledge). With each system level more directly linked to resource and specialization provision, this principle offers the basis for controlled experimentation, operational and functional diversity from which success experience can be shared more broadly with other system facets (Biggs et al., 2012). As such, this is a key enabler principle for all other resilience principles, particularly learning and experimentation, participation, modularity, and redundancy. Within the context of event management, polycentric governance ensures response diversity throughout the multiple scales of operations and service delivery, while mitigating the shortcomings of top down horizontal governance mechanisms.

The System of Academic Events

Academic events fall under the broader category of business or Meetings, Incentives, Conventions, and Exhibitions (MICE) events. They primarily appeal to scholars and students at various stages of their academic career with primary aims to exchange research-based ideas, network, and even explore recruitment opportunities (Storme et al., 2017). Academic events are increasingly attended by government agencies, nongovernmental organizations, and the industry. The involvement of the industry is mostly sectoral and revolves around the key theme of the event; still academic events attract great attention from the publishing industry as well. Depending on their size and scale academic events may fall under the following categories: conference, convention, congress, symposium, forum, seminar, consortium, summit, and workshop (Mair, 2014). Hansen et al. (2020) advanced further the agenda by grouping academic events into four key categories: congress, specialty conference, symposium, and practitioners' meeting. Their typology was based on the differentiating dimensions of size, academic focus, participants, and tradition, which constitute key attributes of the academic event system. Additional defining parameters were the physical and temporal space, minimum duration of 2 days, and minimum participation of three different institutions (Hansen et al., 2020).

Event management literature defines stakeholders as individuals and groups with a stake in the event and its outcomes. They extend from those participating in event planning, organization, production, sponsors, community representatives, and all affected directly and indirectly by the event (Getz, 1991). Stakeholders are differentiated on the grounds of their primary or secondary role and involvement to the event (Clarkson, 1995). Primary stakeholders' engagement and active participation is considered essential for the success and viability of the event itself, while that of the secondary does not necessarily have a direct impact. Todd et al. (2017) identify five key categories of primary stakeholders: the participating, attending, supporting, organizing, and supplying ones, which are well applicable in the context of an academic event. The role and contribution of primary stakeholders is essential for the delivery of the event at varying levels of importance and context, which suggests a layer of inherent systemic complexity. Primary stakeholder groups within their interests and power dynamics may become actors by influencing decision making and event governance at a functional and organizational level (Getz & van Niekerk, 2019).

The complexity of the dynamic interrelations between the individuals and event stakeholder or actor groups manifests during the various stages of event management: planning (preevent), coordination (during event), and evaluation (postevent) (Goldblatt, 2002). In the context of academic events the key underlying principle for most primary stakeholders' engagement is value recognition, which refers to either individual participants, event contributors, or to the event brand in itself (Hessels et al., 2009). The concept is closely associated to academic credibility as in the perceived value of a researcher based on their academic outputs, grant acquisition, and expertise recognition. Hansen et al. (2020) parallelized primary academic event stakeholders with "investors" who engage in dynamic and continuous exchanges of conversions of various forms of credibility to build currency for further conversions (e.g., networking). Latour and Woolgar (1986) considered credibility and engagement in conversions as key ingredient of academic life, only to highlight the anticipated expectations and perceived purpose of academic events. Networking, as a specific form of academic conversion, entails an additional layer of complexity due to its inherent and simultaneous multidirectionality. Similarly, collaborations (peer–peer, institution–institution, academia–industry) are based on complex multilayer interactions that often entail a high level of uncertainty. Still, such conversions can only run within the event system boundaries and are effectuated through the various formal and informal system structures that enable, facilitate or hinder conversions (Hessels et al., 2019). With all primary stakeholders of academic events aiming for "a return on investment," there is an expectation for a continuous and reinforcing feedback loop that amplifies system performance and outputs at multiple levels.

Methodology

Primary event stakeholders as system actors fall under multiple categories of interests, expectations, and behavior. Due to the absence of previous research on the operationalization and constructs of event resilience, an exploratory grounded information collection by means of semistructured interviews was deemed most appropriate to capture the complete and detailed representation of stakeholders' views and experience (Patton, 2014). The interview guide was designed around the seven principles of resilience theory with the aim to explore their relevance and application to the experiences, perceptions, and behaviors of academic event actors during the pandemic. Purposeful sampling was adopted to recruit participants who were most suitable to provide insight on the research aim (Silverman, 2015). Data were collected from academics who attended academic events online or in hybrid format during the period of the pandemic. All participants were affiliated and/or associated to academic events in the broader tourism and hospitality discipline. The total population was unknown. A total of 33 interviews were conducted online before the research reached information saturation (Altinay et al., 2015; Silverman, 2015). Participants (age: 29–63) belonged to five distinctive actor (primary stakeholder) groups: participant (P), attendee (A), accompanying person (AP), member of event's scientific board (SC), and event organizer (EO). A first round of participants was invited through personal contacts and a second round through snowball sampling. The interviews took place between November and December 2021 via social media platforms. The interviews were conducted in either Greek or English and lasted between 30 and 45 min. Interview quotes were translated in English by the author. Findings were systematically categorized by means of the analytical process of content analysis in a total of 279 statements (Kassarjian, 1977). An interpretive approach was adopted to determine the relevance, broader meaning, and implication of statements along the seven principles of resilience (Ahuvia, 2001; Silverman, 2015). The interpretive content analysis allows researchers to apply "theoretical sensitivity" during the coding stage of the process, hence not to treat codes in isolation but rather allows "the flexibility to take context more fully into account" (Ahuvia, 2001, p. 146). This approach is deemed more appropriate for exploratory research designs (Ahuvia, 2001; Silverman, 2015), like the one presented in this article that aimed to conceptualize systemic academic event tourism resilience for the first time. Table 1 summarizes the profile of research participants according to their actor (primary stakeholder) group.

Table 1
Sociodemographic Characteristics of the Studied Sample ($N = 33$)

	N
Age	
29–35	7
36–50	20
51+	6
Gender	
Male	19
Female	14
Actor group	
Participant (P)	17
Attendee (A)	4
Keynote speaker (KN)	2
Academic committee (AC)	7
Event organizer (EO)	3

Note. No respondent identified themselves under the option of *Gender: Prefer not to answer*, hence is excluded from the table of descriptives.

Results

The first three principles of Diversity and Redundancy [P1], Connectivity [P2], and Slow Variables [P3] refer to key system properties and processes to be managed, while the latest four—Understanding the system as CAS, Learning and Experimentation, Participation, and Polycentricity—address key attributes related to its governance (Biggs et al., 2012). A total of 19 themes were identified under the seven principles of resilience constructs based on the experience and perspectives of 33 primary academic event stakeholders (actors):

[P1] Diversity and Redundancy: IT infrastructure; Multinational Organization; Multiple audiences; Accessibility

[P2] Connectivity: Networking value; Fostering engagement; Sharing responsibility; Increasing support; Human interaction

[P3] Slow Variables and Feedbacks: Brand; Authenticity; Environmental footprint

[P4] Complex Adaptive System: Replicability; Event features; Online presence

[P5] Encourage Learning: Learning by doing; Continuous engagement

[P6] Broadening Participation: Feeling of community; Opinion value

[P7] Polycentric Governance: no theme identified under the principle.

Table 2 summarizes the results of content analysis by research construct and provides sample statements for each of them. Interviewees are coded under gender (M/F), age, and actor engagement to the event (P/A/AP/SC/EO).

The identified themes highlight operational aspects of academic event resilience in times of uncertainty and system disturbance. Findings' frequency reflects perceptions of both the whole sample and per category of actor, yet themes emerged in an aggregate way as the disproportionate number of actor participants per category did not allow a further exploration of specific perceptions per category group. Some inferences can be made through the analysis of category-specific frequencies. Emerging themes relate to either catalysts or inhibitors of system resilience, but research findings suggest they could be subject to turning points once certain thresholds have been overpassed. This is, for instance, the case of IT and technology application where from one end it could enhance system connectivity and redundancy while if used in excess might compromise an event's brand and human interaction element. The exact identification of turning points of operational resilience attributes in beyond the scope of this research.

In terms of [P1], the most prominent theme was *IT Infrastructure* (100%) as technology application proved vital in ensuring and enabling both the viability and functionality of academic events during the pandemic. The expansion to *Multiple Audiences* (75.6%), which referred mainly to the enhanced engagement of industry audiences, compensated for the loss of academic participants who couldn't overcome the challenges of *Accessibility* (66.7%). To promote Connectivity [P2], *Networking Value* (93.9%) remained the main resilience attribute for all key participant audiences. As a result, *Fostering Engagement* (75.8%) though the active exchange of information and feedback seemed the priority for the participant audiences (participant, attendees, keynotes) to maintain engagement throughout the event. *Increasing Support* (36.4%) and *Sharing Responsibility* (30%) proved key connectivity attributes from an organizational perspective, which were at times compromised due to the lack of the anticipated level of *Human Interaction* (36.4%). Slow Variables and Feedbacks [P3] have a profound effect on the values and image associated with the

Table 2
Content Analysis Findings

Items/Sample Coded Statements	Frequency % (*N*)					
	P	A	KN	AC	EO	Total
[P1] Diversity and Redundancy						
IT infrastructure	100.0% (17)	100.0% (4)	100.0% (2)	100.0% (7)	100.0% (3)	100.0% (33)
We were lucky to host Distance Learning courses in our University, so all the infrastructure was more or less readily available to launch the events online within days. (M, 37, EO)						
The hybrid option was just brilliant; one day you attend the event in person and the second from the comfort of your sofa. (M, 33, P)						
Multiple audiences	70.6% (12)	75.0% (3)	50.0% (1)	85.8% (6)	100.0% (3)	75.6% (25)
Once we started having cancellations from academics, we decided to boost promotion to our industry partners. Most of their employees were working from home and had free time in their hands. (M, 45, AC)						
Most of the invitations I had in the last two years were for participating in academic-industry panels and events. Felt as industry's engagement was growing or that there was a need for more applied considerations. (M, 61, KN)						
Accessibility	58.8% (10)	75.0% (3)	100.0% (2)	71.4% (5)	66.7% (2)	66.7% (22)
I decided to drive (internationally) to the event to avoid the hassle of airports and flights. (F, 43, P)						
Multinational organization	0 (0)	0 (0)	0 (0)	85.7% (6)	66.7% (2)	24.7% (8)
With the country-specific regulations continuously changing, we had the flexibility of hosting [the conference] in one of our home institutions at short notice when we realized that most participants were local. (F, 47, AC)						
[P2] Connectivity						
Networking value	100.0% (17)	100.0% (4)	100.0% (2)	85.7% (6)	66.7% (2)	93.9% (31)
Once I realized that the keynote of X was canceled, I lost interest to the event completely. I was really looking forward to hearing their views on the topic I am working on. (M, 29, P)						
When I realized that they moved everything online, I just cancelled my attendance. My main motivation to attend was meeting certain people in person. (M, 47, A)						
Fostering engagement	100.0% (17)	50.0% (2)	100.0% (2)	57.1% (4)	0 (0)	75.8% (25)
When I joined the session for my presentation, none of the 15 attendees had their camera on. Just the chair and myself. It felt really strange, especially because nobody asked me any questions afterwards. (F, 39, P)						
I just actively engaged with the conference for the fifteen minutes of my presentation. It is so easy to get distracted when everything is online. I was responding to emails for most of the time. (F, 51, P)						

(*continued*)

Table 2 (Continued)

Items/Sample Coded Statements	Frequency % (*N*)					
	P	A	KN	AC	EO	Total
Increasing support I contacted the organizing committee on a few occasions and each time the response was signed by a different person. I am not sure how many people were working behind the scenes at the end. (M, 47, P)	35.3% (6)	15.0% (1)	0 (0)	57.1% (4)	33.3% (1)	36.4% (12)
Sharing responsibility We realized quite early that we needed to share all [planning] files online and provide access to all members of the team. Those of us with kids at home got sick a couple of times so it was important we felt we didn't delay the process. (F, 42, AC)	0 (0)	0 (0)	50.0% (1)	100.0% (7)	66.7% (2)	30.0% (10)
Human interaction *There was this conference I wanted to attend where in their webpage you would get responses to your questions from a bot. It was just ridiculous.* (M, 33, A)	41.2% (7)	15.0% (1)	50.0% (1)	28.6% (2)	33.3% (1)	36.4% (12)
[P3] Slow Variables and Feedbacks						
Brand I didn't mind the conference moved completely online. I was there for the [conference] theme and brand, not for the location. (M, 53, P)	94.1% (16)	100.0% (4)	100.0% (2)	100.0% (7)	100.0% (3)	97.0% (32)
Authenticity I have lost my interest on academic events very early on the pandemic. After a while all conferences and webinars felt the same, addressing the same issues of Covid-19 recovery and post pandemic era. It was even the same names of people presenting in most of the cases. (M, 33, P)	94.1% (16)	75.0% (3)	100.0% (2)	85.7% (6)	66.7% (2)	87.9% (29)
Environmental footprint Online events are definitely greener; just think of all those wasted posters and printouts, the food waste at the venue and emissions from the transportation of all participants. (F, 43, P)	41.2% (7)	50.0% (2)	0 (0)	71.4% (5)	100.0% (3)	51.5% (17)
[P4] Complex Adaptive System						
Event features I found it impossible to attend the full three-hour sessions. The breaks in between made it even more unbearable. I could either attend the morning or afternoon session, but definitely not the full day. (F, 43, P) I really missed the element of the social interaction. Even if the organizers put together an online social event it felt really awkward and strange to most. I think they should have reconsidered the duration, purpose and numbers of the event more carefully. (M, 52, P)	100.0% (17)	100.0% (4)	100.0% (2)	57.1% (4)	66.7% (2)	87.9% (29)
Online presence Since we moved everything online we decided to hire somebody part-time just for the marketing and media communications. Sharing posts frequently, reaching out to new audiences and engaging with participants in the online platforms of the conference quickly became a very demanding part of the job. (F, 47, AC)	35.3% (6)	15.0% (1)	0 (0)	100.0% (7)	100.0% (3)	51.5% (17)

(*continued*)

Table 2 (Continued)

Items/Sample Coded Statements	Frequency % (*N*)					
	P	A	KN	AC	EO	Total
Replicability	17.6% (3)	0 (0)	0 (0)	100.0% (7)	66.7% (2)	36.4% (12)
We were lucky enough as our Conference only took place in the second year of the pandemic, so we had the opportunity to observe how other event organizers reacted and managed their events. Still, nothing could have informed us of the unpredictable challenges we had to face. (M, 42, EO)						
[P5] Encourage Learning						
Learning by doing	88.2% (15)	75.0% (3)	0 (0)	100.0% (7)	100.0% (3)	84.8% (28)
By a certain point in time we were clear that this event was not going to be comparable with the previous ones nor would achieve the same objectives. We just committed to do the best we could for the legacy of event, and this was somehow liberating. (M, 37, EO)						
I questioned my reasons to participate a few times, as I was hearing experiences from colleagues who attended other events and found it a waste of time. In the end, I decided to participate just to have my own opinion and give it a try. (M, 47, P)						
Continuous engagement	70.6% (12)	75.0% (3)	50.0% (1)	100.0% (7)	100.0% (3)	78.8% (26)
In the social media pages of the event, they ran regularly mini surveys on our expectations and preferences. It felt as if they were monitoring demand which was not necessarily a bad thing, even if at times I was questioning if the event would still go on. (F, 52, P)						
[P6] Broadening Participation						
Opinion value	88.2% (15)	75.0% (3)	100.0% (2)	100.0% (7)	100.0% (3)	90.9% (30)
I really valued how the organizers ran a feedback survey at the end of the event. I am not sure if they will host the next event online but it was nice to see my experience considered amidst all this adversity. (F, 43, P)						
Feeling of community	88.2% (15)	75.0% (3)	50.0% (1)	100.0% (7)	100.0% (3)	87.9% (29)
I really enjoyed the regular interaction through the social media event pages. It made me feel part of a community. I even e-met some people online I wouldn't have the opportunity otherwise. (M, 47, P)						

academic event. The event *Brand* (97%) appears as the key attribute of its resilience. Capitalizing on a strong brand at times of adversity enhances an event's resilience to maintain integrity and move in new regimes of functionality even at times where its *Authenticity* (87.9%) is jeopardized. Key feature of the new academic event regime appeared to be its *Environmental Footprint* (51.5%). The adaptation of key *Event Features* (87.9%) such as structure, duration, attendees' numbers, and social events was essential for most primary stakeholders. Each from their point of view seemed to realize the necessity of adapting key features to enhance an event's operational functionality and experience satisfaction. In line with [P4], academic events as CAS are subjected to the unpredictability and nonlinearity of the actors' interlinkages, which are dependent on the complex dynamics of participants, keynotes and organizational features. These interlinkages are inherently contextual to their nature hence subject to minimum ability for *Replicability* (36.4%). [P5] of *Encouraging Learning* enhances systems' resilience through the continuous dynamic process of *Learning by Doing* (84.8%), which appeared relevant both for event management and delivery. *Continuous Engagement* (78.8%) with primary stakeholder groups enables consideration and communication of preferences and expectations in a way that informs event design and service delivery. To enhance the value of continuous learning for achieving system resilience the Broadening of Participation [P6] was effectuated through the reiteration of *Opinion Value* (90.9%) throughout the various stages of event management (design, delivery, and evaluation) as well as instigating the *Feeling of Community* (87.9%) among participants. No evidence was collected to inform the operationalization of [P7] of Polycentric Governance within the experience of the participants and typology of events considered in this research. This principle might have been more relevant to association-affiliated academic events of different geographic designation (e.g.. ATLAS or TTRA events).

Discussion

In adopting a systems thinking approach, this study explored the dimensions, facets, and attributes that define an event's resilience in times of uncertainty. The approach conceptualized events management (design, delivery, evaluation) as a CAS and explored the operationalization of its reliance along the seven principles of SES resilience. Building on the contextualization of academic events (Hansen et al., 2020), the study applied a qualitative research design to explore perceptions, attitudes, and experiences of primary academic event stakeholders (participants, attendees, keynotes, members of event academic committee, and members of event organization) as a result of the COVID-19 pandemic adjustments. With a sample size of 33 participants the study identified potential catalysts and inhibitors of event resilience from the various stakeholder perspectives. Findings in most of the cases are congruent with the experience of the body of stakeholders, while occasionally they reflect concerns and perceptions of a particular group. Within this context, the theoretical contribution of this research is found on the operationalization of attributes that influence an event's resilience in a way that ensures quality experience, value, and purpose satisfaction for all stakeholders and event viability during times of system perturbations.

More specifically, system diversity and redundancy [P1] are essential for responding to change and uncertainty. They provide insurance for the system to return to its functionality (Walker & Salt, 2012). For all the academic event actors who participated in this research, *IT Infrastructure* solutions turned vital for the functionality of academic events during the COVID-19 pandemic as suggested by other research on technology and innovation management during the pandemic (George et al., 2020). Organizations with well-embedded infrastructure (e.g., distance learning environments) managed to build recovery mechanisms faster and provide service alternatives that to some extent avoided the complete cancellation of the event. Similarly, event systems with inherent organizational diversity such as *Multinational Committees*, or multiple *Accessibility* options proved more resilient due to their factual (by organizers) or perceived (by attendees) ability to provide service or service component alternatives. System modularity as in the overdependency on specific system attributes, facets, or actors jeopardizes a system's resilience due to the difficulty of compensating for their role in service provision, particularly when it is key for

service delivery at ground level. In expanding Getz et al. (2019) the diversification of the target audience serves exactly the same purpose of systems' functional causality. By expanding to *Multiple Audiences* (e.g., industry) that compensate for the loss of others (e.g., academics) the academic event system ensured its viability and response diversity due to the diversity of values and expectations each target audience associated to the event.

The Principle of Connectivity [P2] refers to the degree, structure, and strength in which system actors interact. In the case of academic events interaction refer to the actual or anticipated exchange of information, knowledge, and conversion of various forms of academic credibility (Hansen et al., 2020). The satisfaction of the *Networking Value* through enabling participants' connectivity proved crucial for the resilience of a number of academic events even from the planning stage (Getz & Page, 2016a). Similarly, *Fostering Engagement* of participants during the academic event proved vital for ensuring service value and safeguarding a quality experience that could reflect on participants' predisposition to attend similar events in the future. It is often the case that an unsatisfying experience might have a detrimental impact on repurchasing intentions (Glyptou, 2021). From an organizational perspective, highly connected systems through *Sharing Responsibility* and *Increasing Support* can recover faster and easier from disturbance due to the increased diffuse of information throughout the system that provides multiple links to sources of recovery, transparency, and enables trust and credibility among the network of stakeholders. Pluralism and information diversity remain paramount to minimize the risk of simultaneous exposure to disturbance, hence compromise the systems' resilience (Hall et al., 2018). Reduced connectivity is often caused due to the fragmentation of information accessibility or the ineffective replacement of key service features such as *Human Interaction.* There is hence a fine balance between ensuring continuous and dynamic (online) connectivity that does not compromise system efficiency nor resilience (Prayag et al., 2020).

Feedback loops serve as indicators of system configurations. In times of disturbance and uncertainty, feedback loops bring to light underlying regimes that are often difficult to identify (Biggs et al., 2015). This is particularly important in the case of Slow Variables [P3] where the rate of change is much slower to the timescale of service provision. An event *Brand* is of key importance to its resilience. An established brand associated with perceived quality attributes of high return value will endure better and longer to system perturbations due to higher stakeholder loyalty (Linnenluecke, 2017). Similarly, in times of uncertainty an event's identity will ensure its *Authenticity* and differentiate it among competitors, hence ensure its viability. Even if the homogenization in response approaches and operational functionality might be of educational value in times of response experimentation, maintaining a diversity in the identity and uniqueness in selling proposition in times of turbulence effectuates the resilience of the event (Hall et al., 2018). Within the new regime of operational functionality, new interventions and service alternatives might emerge that if adopted in the longer term might transform the service value and performance. A consideration of events' *Environmental Footprint* may give rise to greener alternatives of system and service components that could potentially impact aspects of its value and brand proposition.

The resilience thinking approach requires an appreciation of events' delivery as a CAS [P4]. The complexity lies in the consideration of the limits and possibilities of what can be achieved, managed, and incentivized in probabilistic rather than deterministic terms. CASs are characterized by nonlinear interactions, sensitivity to initial conditions, and their dynamics are adaptable to the context and timing of disturbance cycle (Biggs et al., 2015). In the case of COVID-19, the continuous change of outbreak cycles and country-specific regulations was imposing an extra challenge in the *Replicability* of response adaptation. Even if adopting tested practices under similar contexts, the dynamic element of emerging patterns and localized interactions are still underlined by a high degree of unpredictability (Holling, 2001). Once CASs have moved into a new functionality regime (online or hybrid academic event), component attributes such as the *Duration* or mode of delivery of the sessions need to be recalibrated in order to maintain quality of the experience (Getz & Page, 2016b). Other than the adaptation of existing features, CASs might require the adoption of new features that facilitate

component interlinkages and improve functionality of the new regime. This was the case of more dynamic and timely interaction through the *Online Presence* of academic events during the time of disturbance (George et al., 2020).

In recognizing an event delivery as a CAS, one acknowledges that system variability is the norm and that knowledge will be always incomplete and partial. As such, Continuous Learning [P5] is required to enhance systems' resilience as in the process of both creating system-specific knowledge and reevaluating its associated values. Adaptive management and comanagement create new knowledge by means of more collective than individual processes (Biggs et al., 2015; Olsson et al., 2004). This learning process of *Learning by Doing* and *Continuous Engagement* with stakeholders facilitates dynamic adaptations that better inform decision making and system governance. This is of particular value to participants of academic events (Hessels et al., 2019; Mair, 2014). An open and unbiased learning process questions not only the established assumptions around the means of delivering a service or event, but also its purpose and associated values (Hansen et al., 2020). The effectiveness of adaptative management and comanagement is dependent on Broadening the Participation [P6] of those actively engaging in the cocreation process of event delivery. Participation ensures transparency—thus more trust in the system and its anticipated outcomes (Walker & Salt, 2006). It nurtures the *Feeling of Community*, creates and strengthens relations between stakeholders that often compensate for the loss of other associated event values (e.g. networking) (Todd et al., 2017). Within the event organization and delivery context, it is difficult to extend management participation and evolution of power to stakeholders. Participation in this case may refer to the process of collating preferences, motivations, and broad views from participants to inform the event planning and design, and ensure that stakeholder priorities are met, or by collecting feedback upon event completion to inform future management and event design or delivery interventions (Biggs et al., 2015). Polycentricity [P7] referred to the governance system where multiple autonomous interacting bodies make decisions and enforce rules within a specific geography or decision context (Schneider, 2012). The participants of this research engaged with independent events where elements of polycentric governance were not allowed. This principle might have been more relevant to association affiliated academic events of different geographic designation (e.g., ATLAS or TTRA events).

Overall, research findings revealed a number of variables that can be associated to all but one of the principles of SES resilience. To a varying extent, all identified variables served primarily as resilience catalysts as according to research participants they facilitated their experience through supporting the transitions in their expectations. From a practical perspective, data suggest that all event stakeholders (100%) have identified within their role and experience *IT Infrastructure* as key enabler for the event's communication, delivery, and participation. Despite the general endorsement, few members of the participants group (42%) stated that cases of IT overdependency (e.g., automated responses, chatbot option) inhibited them at times to further engage or partake in the event due to the feeling of compromise on the element of human interaction, which was of high value during lockdown and distance experience. Data from all stakeholders suggest that the event resilience is subject to maintaining the feeling of human community and belonging (88%) even through IT services. Overall data findings suggest that event intangible attributes proved more pivotal for ensuring overall operational resilience for all stakeholder groups. More specifically, *Networking Value* remains the primary motivation for participating in an academic event even at times of turbulence. Data from all stakeholders suggest that event resilience should be associated with ways of ensuring networking opportunities (94%) regardless of the mode of delivery. This finding reiterates the importance of fostering connectivity opportunities through engagement and sharing responsibility as indicated by data on the unanimous agreement of the participant and academic group (100%), respectively.

Data further on suggest that event resilience relates strongly to perceptual associations to the event's *Brand* (97%) and *Authenticity* (88%), implying the reasons key actors (primarily keynotes, participants, and attendees) differentiated the event among others and decided to still participate regardless of the risk of their unattended expectations due to

ongoing uncertainty and change. This is the essence of resilience—confiding trust in the process and outcome despite uncertainty and adversity. Other key enabling variables appear to be the nourishing of the *Feeling of Community* (88%) and *Opinion Value* (91%) that simulates the feeling of the cocreation process. Interestingly, these two variables were unanimously endorsed (100%) by the academic committee and event organizer groups. For the groups of participants, attendees, and keynotes the operational adaptation of *Events Features* (such as duration of sessions, breaks, and socializing activities) for online and hybrid delivery was paramount (100%) for their experience and event resilience. The extension of the event to *Multiple Audiences* (e.g., industry) is another adaptive consideration that according to 76% of stakeholders enhances event resilience through diversity and redundancy.

Research findings did not identify clearly any inhibitors of event resilience. Instead, within the context of the CAS, it became apparent that certain variables might create a synergetic (e.g., *Learning by doing* with Continuous Engagement and *Feeling of Community*) or antagonistic effect (e.g., *IT Infrastructure* to *Human Interaction*). Variable antagonism in terms of event resilience can emerge in the cases where system thresholds that relate to quality experience and associated event value for each actor are compromised. Data identify *Online Presence* under CAS as an interesting case of a variable in this category. What academic committee and event organizers identify as key catalyst for event resilience (100%) the groups of participants, attendees, and keynotes consider rather as inhibitor when compromising their perceived event experiential value (average 30%). Still, data suggest that when considering variables of broader participation, the *Opinion Value* of all stakeholders during the event, and when possible even during the design phase, infuses a synergetic effect towards event resilience for 91% of the stakeholders' group. The exact turning point of thresholds is subject to the specifics of each event structure, participation, and management; their detailed exploration is beyond the scope of this article.

Conclusions

The study explores the enablers and inhibitors of operational event resilience. Building on systems thinking the study focuses on the dynamic interface of interacting elements, attributes, and actors that dictate an event's identity, structure, and behavior during system disturbance and uncertainty. Findings from the contextual examination of academic event primary stakeholders' behaviors and experiences during the COVID-19 pandemic support the operationalization of event resilience along the seven principles of the SES. The three first principles of Diversity and Redundancy [P1], Connectivity [P2], and Slow Variables [P3] revealed event attributes and key system properties that relate to systems' capacity to maintain functionality and deliver to the expected value and return of investment from attending them. Findings suggest that values associated with academic events (Edelheim et al., 2018) persist even at times of turbulence, yet require strong connectivity features and supporting structures that enable response diversity and operation redundancy to move the system into the new state of equilibrium. Slow variables such as an event's brand and identity may minimize the duration of uncertainty loops and support faster system transitions into the state of stability. All pattern configurations reside in the recognition of events as Complex Adaptive Systems [P4] where all feedbacks and interlinkages are subjected to nonlinear and unpredictable norms. Enhanced system resilience stems from acknowledging the pervasiveness of unpredictability while nurturing a dynamic approach of continuous iterations that allow the system to self-organize in response to internal system feedbacks. Learning and experimentation [P5] in the context of acquiring new knowledge, skills, values, and behaviors are essential for the event system to evolve and maintain functionality within the expectations of the primary stakeholders (participants, attendees, keynotes, members of the academic committee, and members of event organization) and standards of the new paradigm. Learning is inherently located at the sharing of information from different perspectives and scales, and hence is enhanced through the broadening of participation [P6] of key actors. The feeling of community, transparency, and the appreciation of contribution promote trust among stakeholders in times of uncertainty and strengthen relationships that effectuate successful event delivery, management and resilience.

The research is subject to a number of limitations primarily relating to data collection. Through the used sample, current research did not identify any findings on the operationalization of the principle of Polycentric Governance [P7], possibly due to the size and governance structure of the events considered. An exploration of this principle would require a stratified sampling and consideration of multiple academic event typologies, including actors of nested events of larger organizations (e.g., ATLAS or TTRA events), which unfortunately did not appear in this sample.

Research findings support the identification of enablers, catalysts, and inhibitors of academic event operational resilience from the perspective and experience of their primary stakeholders. Still, the sample of participants considered in this research is subject to the bias of stakeholders' typology imbalance. Other than academic participants, future research could extend consideration of industry audiences. Moreover, a stratified sampling would enable a balanced consideration of all stakeholders' perspectives with a more balanced and in-depth consideration of their viewpoints. Even if indicative of the direction and strength of their relationship, findings suggest they could still be subject to turning points once certain thresholds have been overpassed. Technology application and response replicability are examples of enablers that could compromise an academic event's resilience if not managed in consideration to other values and expectations of their audience. The identification of turning points of operational resilience attributes in beyond the scope of this current research. The aim of this article was to explore the applicability of the 7 Principles of Resilience Theory in the context of academic event management and identify variables for its conceptualization. Future research should aim to operationalize in detail the specific variables by identifying specific benchmarks of reference and turning points of operational resilience. An advanced operationalization will require a more extensive data collection process (time and sample size) that will take into account actor population characteristics and potentially extend to other academic and business events of other disciplines.

The research is among the first to adopt a systems thinking approach for the exploration of determinants of operational event resilience. Its theoretical contribution is twofold. On one hand, it explores the application of the seven principles SES framework in the context of events. In this way it conceptualizes event management (design, delivery, and evaluation) as a system of multiscale and multiattribute components that are still subject to the founding structures of SES in regard to resilience, still independent to the host destination. On the other hand, it contributes to the sparse body of event research on enablers, catalysts, and inhibitors of operational resilience in times of disturbance. Findings refer to academic and potentially business events systems (design, delivery, and evaluation) that moved into system reconfiguration such as changes in actors, modes of delivery, scope, and potentially audience in response to external disturbance. From a managerial perspective, the recognition of events under perturbation as CAS calls for managerial interventions that allow the system to self-organize and transform under a probabilistic rather than a deterministic mindset. Contingencies should be put in place to effectuate change and transition rather than controlling and striving for predefined outcomes. Resilience thinking should be grounded on mechanisms of continuous monitoring of systems' behaviors and learning through the enhanced consideration of system values, attributes, and stakeholder perspectives.

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