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Building megaproject resilience with stakeholders: The roles of citizenship behavior and critical transition mechanisms☆

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ABSTRACT

We explore the role of stakeholders' citizenship behaviors in building megaproject resilience to unexpected events. Our case study is of a mega construction project in Europe. We analyze rich data from semi-structured interviews to build a grounded theory. We find internal and external stakeholders engaging in project citizenship behaviors as a response to unexpected events that threaten achievement of the iron triangle. Further, our findings suggest that the effects of megaproject citizenship behaviors on megaproject resilience can be increased through critical transition mechanisms. We distinguish between three such critical transition mechanisms: (a) aggregating individual citizenship behaviors to the group level (power in numbers); (b) bringing issues to the right individual (boosting); and (c) shifting the mindset of a dominant percentage of a stakeholder group (mindset shift). Our research contributes towards a better understanding of the important role played by project stakeholders as a resource in building megaproject resilience and the processes that render their citizenship behaviors consequential for megaproject resilience.

1. Introduction

It is well documented that megaprojects contend with a disproportionate number of unexpected events (UEs) (Nachbagauer & Schirl--Boeck, 2019). Megaprojects are project systems greater than 0.01% of the national gross domestic product (GDP) (Hu, Chan, Le, & Jin, 2015). They are characterized by long duration, a high degree of complexity, and many stakeholders making them highly vulnerable to the disruptive effects of UEs (Boateng, Chen, & Ogunlana, 2015; Taleb, 2007). These unexpected events can threaten the "iron triangle" (project timeliness, quality and cost) as well as the project's survival (Braun, Ferreira & Sydow, 2013; Rahi, Bourgault & Robert, 2019; Yang, Zhu, Cui, He & Zheng, 2021). Thus, resilience, the ability of projects to "perform under varying conditions and in the face of unexpected changes and crisis" (Yang, Wang, Zhu & Müller, 2022, p. 65) is critical to the effective functioning of megaprojects (Nachbagauer & Schirl-Boeck, 2019; Rahi et al., 2019).

Project stakeholders, all those individuals, groups, and organizations that might affect or be affected by the project's activities, have been shown to play a crucial role in attaining successful project outcomes (e.g., Aaltonen, 2011; Beringer, Jonas & Kock, 2013; T. Braun et al., 2013). Stakeholders participate at various organizational levels: as individuals, as collectives of individuals in a team or group, as members of the project organization itself, and as members of the broader community served by the project (Borg, Naderpajouh, Scott-Young & Borg, 2022). However, the role of stakeholder behavior in contributing to project resilience remains an under-researched topic (Naderpajouh, Matinheikki, Keeys, Aldrich & Linkov, 2020; Signori, 2017). In this research, we focus on a specific type of stakeholder behavior i.e., organizational citizenship behavior in megaprojects (Wang, He, Lu & Yang, 2018; Yang, He, Cui & Hsu, 2020, 2018).

Organizational citizenship behavior (OCB), discretionary, extra-role behaviors on the part of individuals or groups that are not explicitly recognized by the formal reward system, has been found to promote the effective functioning of organizations (Organ, 1988). The organizational citizenship behavior literature asserts that citizenship behaviors positively affect organizational success by "increasing the stability of organizational performance" and by "enabling the organization to adapt more effectively to environmental changes" (Podsakoff, MacKenzie, Paine & Bachrach, 2000, p. 546). In the context of megaprojects, OCB is

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termed megaproject citizenship behavior (MCB) (Wang et al., 2018; Yang et al., 2020, 2018). MCBs are non-contractual, voluntary, extra-role behaviors observed across internal and external project stakeholders that collectively affect positive megaproject outcomes (T. Braun et al., 2013; He, Yang, Li & Luo, 2015; Yang et al., 2018, 2020). Internal stakeholders, sometimes called primary stakeholders, are stakeholders that are formal members of the project organization (Cleland, 1998). External, or secondary, stakeholders are not formal members of the project organization but may affect or be affected by the project (Clarkson, 1995). Recent case studies suggest that MCB can contribute to improved megaproject performance by mitigating shocks and disturbances and reducing uncertainty (Luo, Liu, Li, Chen & Zhang, 2020; W. Wang et al., 2021; L. Wang, Müller, Zhu & Yang, 2021; Yang et al., 2020). Findings by Yang et al. (2018) document that MCB occurs at an inter-organizational level and promotes contingent collaborative inter-organizational behavior and harmonious relations among project organizations. L. Wang et al. (2021) and Yang et al. (2020) note that contingent inter-organizational collaboration and a collective response of stakeholders to adversities is key to megaproject resilience. Though, the importance of megaproject citizenship behavior in overcoming project uncertainty and achieving project management effectiveness is acknowledged, little is known about *how* megaproject citizenship behavior contributes to megaproject resilience.

Our research investigates "How does stakeholder megaproject citizenship behavior (MCB) affect megaproject resilience?" We address this question by conducting a case study of a megaproject, the construction of a stadium for a national soccer club and its prestigious team. The club and team are located in Europe. We collectively refer to them as "The Club", and to the country in which they are located as "Club Country". We adopt D. A. Gioia, Corley and Hamilton (2013) qualitative case analysis method to build a theory of how MCB affects resilience at the project level. In the section that follows we introduce literature on stakeholder management, citizenship behavior, and megaproject resilience that informs our case study. In the methods section we describe our data collection and analysis procedures and engage in a grounded theory building process. The outcome of this effort is a theoretical model of how stakeholder MCB is transformed via three mechanisms to yield project level resilience in response to disruptive UEs. In the discussion section we develop inferences about how stakeholder management theory can be expanded to facilitate megaproject resilience and why the citizenship behavior construct may need to be expanded for megaprojects. Last, we present the implications of our study for future research and management practice as well as its limitations.

2. Theoretical background

In this section we begin by reviewing the literature on stakeholder management theory. We then introduce relevant literature on project/megaproject citizenship behavior and project/megaproject resilience. Finally, we summarize the theoretical views that lead to our research question.

2.1. Project stakeholder management theory

Stakeholder theory has attracted researcher attention since Freeman (1984) published his seminal book entitled "Strategic Management: A Stakeholder Approach." The main argument of stakeholder theory is that an organization has relationships with various constituent groups (both internal and external) and that it can engender and maintain the support of these groups by considering and balancing their relevant interests (Freeman, 1984; Jones & Wicks, 1999), ultimately leading to higher organizational success. Thus, stakeholder theory posits that "systematic attention to stakeholder interest is critical to firm success and management must pursue actions that are optimal for a broad class of stakeholders, rather than those that serve only to maximize shareholder interests." (Gelb & Strawser, 2001, p. 3) As noted by Aaltonen and Kujala (2016, p. 1538), "a central purpose of stakeholder theory is to enable managers to understand and, subsequently, manage stakeholders more strategically." To do so, managers need to try to keep the interests of stakeholders (e.g., customers, suppliers, employees, and communities) aligned with those of shareholders.

Cleland (1986, p. 38) introduced 'project stakeholder management' as the "…use of proactive project management for curtailing stakeholder activities that might adversely affect the project and for facilitating the project team's ability to take advantage of opportunities to encourage stakeholder support for project purposes." Since then and increasingly so, project stakeholder management has been considered a core task within project management critical to achieving project success (Eskerod & Jepsen, 2013). However, the focus has largely been on "curtailing stakeholder activities that might adversely affect the project" (Alaghbari, Kadir & Salim, 2007; Dyer, 2017; McElroy & Mills, 2000; Mok, Shen & Yang, 2015; Olander, 2007; Olander & Landin, 2005; Oppong, Chan & Dansoh, 2017; Scheepers, McLoughlin & Wijesinghe, 2022; Wu, Liu, Zhao & Zuo, 2017). This perspective largely omits consideration of stakeholders as an untapped resource who can contribute to project resilience.

Nonetheless, it is clear from recent project management research that project stakeholders, internal and external, can have a significant positive impact on project processes and outcomes (Beringer et al., 2013; Eweje, Turner & Müller, 2012; Meng, 2012; Olander, 2007; Sutterfield, Friday-Stroud & Shivers-Blackwell, 2006). Yang et al. (2022) investigate how stakeholder relationships in inter-organizational projects support project resilience. They conclude that project resilience is affected by prior stakeholder ties as well as stakeholder governance. Walker and Lloyd-Walker (2016) find that coping with uncertainty and unexpected events can be achieved through collaboration between project stakeholders with varied skills and competences. Aaltonen, Kujala and Lehtonen (2010) discuss that closer stakeholder engagement might be used to both scan for unexpected events and provide resources and mechanisms to deal with them through collaboration. Signori (2017) looked at how open dialog with stakeholders benefited both the respective company and the stakeholders through a better understanding of stakeholders' interest and the company's needs and expectations. Klein, Mahoney, McGahan and Pitelis (2019) found that changes in stakeholder enfranchisement, i.e., the designation of which stakeholders are legitimate holders of decision rights, are a pathway by which organizations can seek to adapt organizational governance when the external environment changes. A study by Gil and Fu (2022) found that the reason why costs escalate for megaprojects is because project managers need to work together with stakeholders beyond the original group, changing the project's governance structure and the project's value proposition as more stakeholders become involved over time. As project managers seek to gain access to essential stakeholder resources to achieve the project's original goals, for example by working with local government to create a new railway, managers may need to renegotiate the distribution of the value to be jointly produced. This enfranchisement of stakeholders can lead the project to grow beyond its original scope, increasing cost, but also creating added social value. In the light of these research findings, a new stakeholder theory of strategic management is emerging (McGahan, 2021) which builds on the idea that stakeholders can act as resources or provide resources for project resilience in megaprojects. Thus, the purpose of project management may not only be to create value for all stakeholders, but also to create conditions that enable stakeholders to create value for the project and provide them with the agency to do so.

2.2. Citizenship behavior

Not only have stakeholders' in-role behaviors been shown important to project outcomes, but there is growing evidence that their voluntary, extra-role (citizenship) behaviors play a significant role in project success as well (e.g., Braun, Miller-Seitz & Sydow, 2012, Braun et al., 2013,

Yang et al., 2020). Multiple project stakeholders have been found to engage in discretionary behaviors that are not included in formal job descriptions, and which benefit the effective functioning of the project (see Lim & Loosemore, 2017). This type of positive behavior was first described with the term "project citizenship behavior" (PCB) in 2001 (Aronson, Lechler, Reilly & Shenhar, 2001). Later, Braun et al. (2012) drew from Organ's (1988) concept of organizational citizenship behavior, conducting an exploratory study of interorganizational projects in Germany, and re-conceptualized OCB as PCB.

Researchers contend that citizenship behavior is more prevalent in temporary (project) organizations versus permanent organizations because of the very nature of these organizations (Braun et al., 2012; Braun et al., 2013; Ferreira, Braun & Sydow, 2013; Yang et al., 2020). Three rationales support this view. First, a clear deadline for task completion fosters shared responsibility and close collaboration, thereby facilitating information sharing between the involved parties in temporary organizations (Morkan, Holahan, & Thomas, 2017). Second, in megaprojects where tasks are highly complex, innovative and important, task accomplishment brings visibility and prestige to the stakeholders involved motivating them to go beyond their contractual obligations and dedicate more time, effort and resources (Bakker, 2010). Third, temporary organizations rely on team structures. Research has shown that citizenship behaviors are more prevalent in team structures (Bommer, Dierdorff & Rubin, 2007; Ehrhart, Bliese & Thomas, 2006), and that team citizenship behavior has a greater impact on organizational effectiveness compared to individual citizenship behavior aggregated to the organizational level (Bommer et al., 2007).

The nascent research on PCBs demonstrates their positive impact on project success. A study conducted by T. Braun et al. (2013) showed that PCBs not only facilitate meeting time, cost, and quality objectives of the project, but also improve the quality of relationships among stakeholders beyond the termination of projects. Guo, Wang, Fu and Liu (2019) examined the impact of PCB on project performance in the sustainable construction context. Their results found a positive impact of PCBs on project performance, which was higher for complex projects. Ferreira et al. (2013) who investigated citizenship behavior of project managers working in various sectors found that citizenship behavior of project managers toward their project team had a significant effect on project goal achievement. Thus, there is a growing body of literature that supports a relationship between PCB and positive project outcomes.

However, the prior studies that have focused on project citizen behavior tend to center on a single stakeholder group, specifically project managers or project team members (T. Braun et al., 2013; Ferreira et al., 2013; Guo et al., 2019; Shafi, Iqbal, Shahzad & Unterhitzenberger, 2021; Xia, Ding & Yuan, 2018, 2022). This gap creates an opportunity to consider the impact of project citizenship behavior of multiple internal and external stakeholders. Additionally, to our knowledge, none of the prior studies have examined mega construction projects in-depth. One exception is a recent study by D. Yang et al. (2020), who examined the primary non-economic motivations behind stakeholders' citizenship behavior in megaprojects. D. Yang et al. (2020) labelled these citizenship behaviors as megaproject citizenship behaviors (MCBs) instead of project citizenship behaviors (PCBs). However, D. Yang et al. (2020) only collected data from managers playing one of three key roles (owners, constructors, and designers) in the implementation stage. Our study examines a broad range of internal and external stakeholders' citizenship behaviors in response to unexpected events in a megaproject, and the effect of these citizenship behaviors on megaproject resilience.

2.3. Resilience

The project management literature acknowledges that project success rates suffer from unexpected events (UEs). Currently there are calls to better understand the concept of resilience in project and megaproject management (e.g., Nachbagauer & Schirl-Boeck, 2019; Rahi et al., 2019). Early use of the term 'resilience' is seen in the field of ecology (Holling, 1973) and has since found popularity in diverse fields such as psychology (Brueller, Brueller, Brueller & Carmeli, 2019; Rutten et al., 2013), engineering (Hollnagel, Nemeth & Dekker, 2006, 2008), manufacturing (Sheth & Kusiak, 2022), crisis management (Weick & Sutcliffe, 2001; Williams, Gruber & Sutcliffe, 2017), supply chains (Novak, Wu & Dooley, 2021; Wieland & Durach, 2021) and organizations and enterprises (Duchek, 2019; Hillmann, 2020; Sheth, 2021; Sheth & Sinfield, 2023; Vogus & Sutcliffe, 2007). While precise references to 'resilience' vary by context, notionally, it refers to the ability of an entity (or system) to maintain its ability to function (as before or better) after the occurrence of an unexpected event that disrupts its state. Resilience is derived from its Latin root *"resiliere"*, which literally means to "bounce back".

Whilst being a multi-disciplinary topic, resilience is also a construct observable at multiple organizational levels. At the individual level resilience refers to the psychological well-being of individuals, especially in times of duress, which positively affects complex organizational performance (Liljenstrom & Svedin, 2005; Sinfield, Sheth & Kotian, 2020). At the group level resilience is inferred from inter-team coordination and self-organization capability during environmental disruptions (Bostick, Holzer & Sarkani, 2017; Sheth & Sinfield, 2019). At the macro level resilience relates to the enterprise's ability to adapt to perturbances caused by forces caused by unexpected events with an aim to maintain continuous value creation at the enterprise level (Sheth & Kusiak, 2022; Sheth & Sinfield, 2023). For a detailed review of resilience concepts on different levels within and around projects see Naderpajouh et al. (2020). This paper focuses on *megaproject resilience* where a project, as a temporary organization, is considered at the macro-level. This perspective is aligned with the project management literature's recognition of the important role played by projects as temporary organizations in contributing to project resilience (Naderpajouh et al., 2020).

As discussed by Geambasu (2011), *project resilience* has emerged as a new way for coping with UEs that may negatively impact the project's ability to achieve its objectives. Concordantly, in project management, resilience has been defined as 'the ability to recover from, or adjust easily to, misfortune or change' (Crosby, 2012, p. 2). Also noteworthy is the definition of project resilience provided by Geambasu (2011 p. 1331) who characterizes resilience as, "…the project system's ability to restore capacity and continuously adapt to changes… to fulfill its objectives in order to continue to function at its fullest possible extent, in spite of threatening critical events." More recent perspectives in project management consider projects as systems embedded in smaller sub-systems (e.g., individuals) and larger parent systems (e.g., society and nation states), which implies their greater vulnerability to unexpected events and external shocks caused at higher system-levels (e.g., pandemics and regional wars) (A. Wang, 2019). Thus, project resilience is defined more generally "as the capacity to organize under a variety of scenarios, including disruptions in the form of shocks and stressors" (Naderpajouh et al., 2020, p. 5), and calls for the examination of projects embedded within sub- and parent-systems.

Rahi et al. (2019) indicate that project resilience capabilities encompass threat sensing (awareness) capacity and adaptive capacity. Specifically, their benchmarking study highlights the role of stakeholder behaviors in building project resilience capabilities. Though they largely treat stakeholders as 'to be managed' entities, they do indicate stakeholder citizenship behaviors as improving adaptive capacity (Bostick et al., 2017). For instance, their observation states "stakeholders, including the client, are encouraged to take ownership of the issue and any possible solutions" (Rahi et al., 2019, p. 16). They also indicate reasonable bypassing of contractual clauses to find solutions to disruptive threats, which, at minimum, relates indirectly to citizenship behaviors, i.e., stakeholders' non-contracted actions and extra-role behaviors, and how they lead to improved project outcomes. Therefore, given the above indicators, we think there is strong motive to study the contribution of stakeholders and more specifically how their

megaproject citizenship behaviors impact project resilience.

2.4. Megaproject stakeholders' citizenship behavior and project resilience

As noted above, characteristics of megaprojects such as their temporary structure, reliance on team-based interorganizational cooperation, and significant social, economic and political importance, have been found to engender high levels of stakeholder citizenship behavior called megaproject citizenship behavior (L. Wang et al., 2021; Wang et al., 2018; W. Wang et al., 2021; Yang et al., 2018, 2020; X. Yang et al., 2022). The project management literature as well as the nascent literature on megaproject resilience suggest that stakeholders' citizenship behaviors may endow megaprojects with capabilities to respond to unexpected internal and external stressors or shocks (Morkan et al., 2017; X. Yang et al., 2022).

The project management literature highlights the importance of quick adaptation and allocation of resources for mitigating negative impacts of UEs (Geraldi, Lee-Kelley & Kutsch, 2010; Jacobsson & Hällgren, 2016; Söderholm, 2008). As Bissonette (2016), Jacobsson and Hällgren (2016), and Walker (2015) note, these reactive responses to UEs often require additional resources. According to Di Maddaloni and Davis (2017), Provan, Sydow and Podsakoff (2018), and Zheng, Chen, Han, Ren and Shi (2021) stakeholders can contribute to filling the resource gaps that result from UEs. Thus, we contend that stakeholder citizenship behavior can provide needed resources to deal with UEs (W. Wang et al., 2021; Yang et al., 2018, 2020, 2021; X. Yang et al., 2022).

Megaproject stakeholders have been shown to anticipate potential problems and develop strategies to overcome them before they become actual issues, as well as to promote continuous improvement that helps projects to be better prepared to handle UEs (Yang et al., 2020; Li, Lu, Cui, & Han, 2019; Wang et al., 2021). Finally, as noted by L. Wang et al. (2021), resilience in megaprojects focuses on a collective response to adversities and recovery from crises through the temporary collaboration of project stakeholders. This finding is consistent with Gilly, Kechidi and Talbot (2014), Thomé, Scavarda, Scavarda, Thomé and de (2016) and X. Yang et al. (2022) who contend that resilience in megaprojects is subject to the joint efforts of multiple stakeholders. Moreover, Yang et al. (2018) find support that citizenship behavior in megaprojects occurs at the interorganizational level, extends beyond the project organization's boundaries, and encompasses both internal and external stakeholders.

Thus, given the recent research findings we argue that project stakeholders and their citizenship behaviors help build megaproject resilience. Our study views both internal and external stakeholders as project assets and valuable resources. This view is consistent with a growing body of research that considers external stakeholders as active contributors and value creators instead of just beneficiaries of value creation (see for example, (Chow & Leiringer, 2020; Derakhshan, Turner & Mancini, 2019; Di Maddaloni & Davis, 2017; Eskerod, Huemann & Ringhofer, 2015; Lehtinen & Aaltonen, 2020). To the best of our knowledge, our research question, "*How* does stakeholder megaproject citizenship behavior (MCB) affect megaproject resilience?" has not been addressed in the literature and responds to the call for studying the role of stakeholder MCBs in contributing to project resilience.

3. Methodology

Our research methodology consists of a case study which we analyze using grounded theory (Edmondson & McManus, 2007; Gioia et al., 2010; D. A. 2013; Glaser & Strauss, 1967; Strauss & Corbin, 1990). We opted to conduct a case study to address our exploratory research question of 'How does stakeholder megaproject citizenship behavior (MCB) affect megaproject resilience?" as it allows us to investigate phenomena in depth. Our methodology provides structure while maintaining flexibility to construct an explanatory theory to answer our research question (Glaser & Strauss, 1967).

3.1. Contextual background

3.1.1. Mega construction project

We selected a mega construction project of a major soccer stadium in Club Country as the case study to explore our research question. Hereafter we refer to the megaproject as New Stadium Project.[1] The stadium is the home of one of Club Country's national soccer teams, henceforth referred to as "The Club." The Club was founded in the early 1900s and is considered one of the most successful sports clubs in Club Country in terms of number of The Club Country Super League Championships won. Additionally, with over 20 million fans, it is one of Club Country's most valuable brands and organizations. It has a very loyal supporter base which makes The Club unique (Disguised academic publication (Year 1) focused on The Club Fans, the Sacrifice shirts, and soccer in The Club Country).

New Stadium is an all-seater, multipurpose soccer stadium, with a capacity for more than 40,000 spectators with nearly 150 executive suites. New Stadium has over 2000 m^2s of restaurants, over 2500 m^2s of terrace restaurants, and a VIP parking capacity for more than 500 vehicles. New Stadium is a 'smart stadium', where fans enjoy high-speed Wi-Fi and StadiumVision technology, an Internet Protocol TV solution with extensive video systems to enhance fan experience and create advertising revenue streams by delivering content from multiple sources to different areas of the stadium. The New Stadium was built on the site of The Club's former home, Old Stadium (1970s–Year 1). Due to its unique location close to several cultural heritage sites in Club Country; and owing to its legal status as a "historic monument" protected by the High Council of Monuments of Club Country, proposals for New Stadium were subject to significant scrutiny leading to several modifications and postponements.

The project began in June of Year 1 with the demolition of The Club's Old Stadium. New Stadium construction started in October of Year 1. The brand-new New Stadium opened in April of Year 4. The Year 1 estimated cost was 152 million Club Country Currency (CCC) which is greater than 0.01% of Club Country's GDP for Year 1 (504 billion CCC), qualifying the project as a mega project (Hu et al., 2015). The actual cost of the stadium was over 400 million CCC. The project's size, the number and type of stakeholders involved, the focus on new technology, and the significance and historic importance of the setting all increased the potential occurrence of unexpected events (UEs).

We selected a holistic single-case design because we had access to a revelatory case which gave us an opportunity to study a phenomenon which was previously inaccessible (Yin, 2018). While megaprojects have been studied before, the New Stadium megaproject took place at a historical location and involved the construction of the home of one of Club Country's most successful sports teams with a loyal and large supporter base. In addition to this unique stakeholder group external to the project, we acquired and obtained access to other stakeholder groups, including to the highest levels within the organization, such as a council board member, the sponsor, and senior management of the Project Owner (The Club). The case is revelatory because of this access to multiple stakeholders, including those at the highest levels in the organization, and our specific focus on and access to the voluntary responses to UEs of both internal and external stakeholders. The unit of analysis is stakeholders' voluntary responses to UEs.

3.1.2. Unexpected events (UEs) during new stadium construction

We identify three UEs that had a negative effect on achieving the iron triangle. These events were related to the project's financial situation (Financial UE), safety on the construction site (Workplace Accident UEs), and corporate social responsibility (Social Responsibility UE). The

[1] We have disguised the case details including, but not limited to, names, dates, and financial numbers, and media releases in order to not reveal the case and associated commercial entities.

financial issues included the unexpected devaluation of the CCC and the consequent worsening of the financial condition of The Club over the course of the project. The safety issues included two serious workplace accidents. One accident resulted in worker injuries, and another lead to the death of a construction worker. The social responsibility issue concerned a public outcry to protect birds from striking transparent building elements. Fig. 1 presents a timeline of the construction project including the three UEs, which we describe in more detail below including their impact on the project.

3.1.2.1. Financial UE. The devaluation of the CCC and consequent worsening financial condition of The Club was a UE that occurred longitudinally over the course of the project. The Year 1 average exchange rate for the CCC was 0.53 USD, while the Year 4 average exchange rate had reduced drastically to 0.33 USD. The CCC had fluctuated within a narrow percentage for more than 10 years and was perceived to be a stable currency. The devaluation of the CCC affected the bottom line of The Club because it made the majority of its income via CCC, but typically had to pay transfer fees and wages, The Club's main expenditures, in USD or Euros (EUR). The devaluation of the CCC also affected the bottom line of the project because many of the construction contracts, as is commonly the case in Club Country's construction industry, were negotiated in USD or EUR. This situation threatened the project's viability through an unexpected substantial increase in the project's cost.

3.1.2.2. Workplace accidents UEs. In July of Year 3, two construction workers were injured at the New Stadium construction site when lifting part of the roof frame using a crane, and in January of Year 4, one construction worker lost his life after falling to the ground. Even with safety measures in place, construction sites are risky work environments. Injury or death on the construction site may occur due to several reasons, such as falling from elevations, overexertion, being struck by an object, or even twisting an ankle while climbing a ladder (Ringen, Seegal & England, 1995). Each accident resulted in project delays due to remedial work to address the damage resulting from the accidents, control and revision of safety standards, and a reduction in morale in the workplace. These delays adversely affected the project timeline and therefore also increased project cost.

3.1.2.3. Social responsibility UE. The third UE relates to pressure from several external stakeholder groups to change the transparency of a building element of the New Stadium to minimize bird strikes. After an official ceremony to introduce plans of New Stadium in February of Year 2, the 3D models and drawings of the New Stadium were used both on The Club's and architectural group's official websites and widely distributed online. The design was popular among fans who considered the transparent element to be the "crown jewel." (Disguised national newspaper article (Year 1) about the national heritage location surrounding the New Stadium) However, soon after the plans spread online, an environmentalist raised the likelihood of bird strikes due to the building element being transparent. Especially at risk were seagulls, with New Stadium located on their flying route. After some time, The Club management became aware of the seriousness of the issue and requested a report from the building element production company. This report acknowledged that the transparent membrane could deceive seagulls and other birds (Disguised online news article (Year 4) focused on seagull issue caused by the New Stadium's planned transparent building element). In August of Year 4, The Club announced that they would modify the transparent building element to an opaquer one in order to protect seagulls (Disguised online news article (Year 4) focused on seagull issue caused by the New Stadium's planned transparent building element). This change in project scope caused some project delays, but overall negative consequences were minimized due to the issue being raised before building element production had started.

In Table 1, we compare the three UEs using several criteria identified by previous studies on UEs: timing, severity of potential consequences of the UE, most highly affected project objective, and predictability (Geraldi et al., 2010; Piperca & Floricel, 2012). The three UEs differ greatly in terms of these characteristics. These UEs represent the major disruptions that the project faced during its lifecycle. Their real and anticipated effects on the project's achievement of the iron triangle catalyzed citizenship behaviors by project stakeholders to minimize negative impact on the project's objectives of cost, time, and scope,

Table 1
Unexpected Event (UE) Type, Description and Comparison across Several Dimensions.

	UE#1	UE#2	UE#3
UE Type	Financial	Workplace Accidents	Social Responsibility
Description of UE	Currency devaluation and worsening of The Club's finances	Injuries and death of construction workers due to workplace accidents	Public outcry to protect birds from striking New Stadium's transparent building element.
Timing of UE	Longitudinal. June of Year 1 to April of Year 4	Sudden, at a particular point in time. July of Year 3 and January of Year 4	Longitudinal. February of Year 2 to February of Year 4.
Severity of UE's consequences on project	High	Moderate	Low
Affected project objectives (Time, Cost, Scope)	Cost and Time	Time and Cost	Scope
Predictability of UE	Low	Moderate-high	Low-moderate
Nature /Cause of the UE	Environment-driven	Internal stakeholder-driven (employee & machinery)	External stakeholder-driven

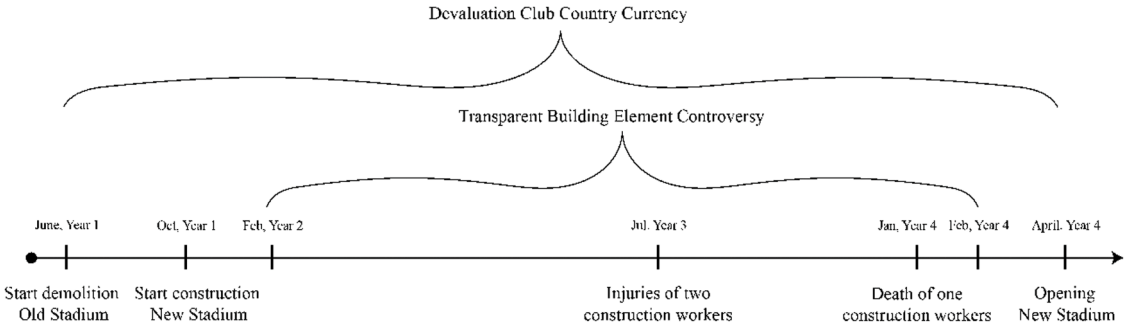

Fig. 1. Timeline of New Stadium Construction Project.

enabling the project to be more resilient to these disruptions.

3.2. Data collection

The primary data for this study consists of a series of semi-structured interviews. Prior to conducting on-site interviews, the interview template was piloted with two experts in construction management. The interview protocol is available in the appendices (Appendix A). In 2017, a total of twenty, open-ended, in-person interviews were conducted with individual representatives from 15 different stakeholder groups (Table 2).

Before conducting the interviews, a brief description of the research was provided. The research procedures were explained to each participant and their consent to participate was obtained. All participants were interviewed by one of the authors. The interviews lasted from 60 to 120 min and took place in the interviewees' office or a nearby café. All interviews were conducted in the native language, to facilitate the communication and accuracy of the informants' opinions and expressions. The interviews were recorded, transcribed verbatim, and translated into English. Since the interviewing author shares the same cultural background as the informants, the researchers could draw on his knowledge of cultural beliefs and value orientation during interpretation of the data (Munet-Vilaró, 1988). Secondary data from various sources such as media accounts, project documents and reports, company websites, press releases, emails exchanged between different project stakeholder groups, and other relevant materials were also collected to triangulate the interview data.

We employed purposeful sampling (Patton, 2002) to achieve an in-depth understanding of our phenomenon of interest most effectively. We identified and selected an information-rich case to most effectively use limited resources (Patton, 2002). We interviewed key individuals representing stakeholder groups that were knowledgeable about the UEs during the megaproject and stakeholders' responses to those UEs (Patton, 2002). The order of the interviews was strategically and pragmatically determined, based on the informants' availability for interviews. All attempts were made to schedule the early interviews with stakeholder representatives who were intimately involved with the construction project. Using a snowball technique, we asked these key informants for recommendations about other potential stakeholders to interview. We continued our interviews until we reached saturation i.e., no new substantive information was acquired (Huberman & Miles, 1994; Miles & Huberman, 1994).

3.3. Data analysis

We analyzed our data using grounded theory (Gioia et al., 2010; D. A. 2013; Glaser & Strauss, 1967; Strauss & Corbin, 1990). Within-case analysis was conducted using open, axial, and selective coding. During the first phase, i.e., open coding, we broke down our data into discrete data extracts. We regularly compared data extracts to group them into first-order concepts. The data yielded several instances where stakeholders spoke of their own or others' voluntary behaviors in response to UEs. Participants also frequently discussed how these discretionary actions affected the ability of the project to "bounce back" after facing adverse events. These instances, closely tied to participants' words, constituted our first-order concepts.

Next, we engaged in axial coding (Corbin & Strauss, 2014), searching for similarities and differences between first-order concepts, a process which allowed us to group first-order concepts expressed into informant terms into more abstract second-order themes. We iteratively moved back and forth between codes and data as tentative relationships emerged, going back in the data to find additional instances of voluntary behaviors and examples of how they led to project resilience. This process enabled us to group the first-order data to distinguish between different types of voluntary actions and different ways in which those voluntary actions led to project resilience, resulting in our seven

Table 2
Stakeholder Group, Category, and Number of Representatives Interviewed per Stakeholder Group.

Stakeholder Group	Stakeholder Category	Stakeholder Group Description	Number of Representatives Interviewed and Representative(s) Description
Architect	Internal	The architecture firm in charge of designing the New Stadium.	1 Representative: The founder of the architecture firm in charge, who is also the Architect of Record on the project.
The Club USA-Supporter Association	External	US-based, not-for-profit supporter association established by The Club fans living in the USA.	1 Representative: A founder member and the Vice-President of the supporter association
Fan Group 1	External	The most prominent fan group of the team, founded in the 1980s by small shop owners in The District of The City.	2 Representatives: A Fan Group 1 cheerleader and one of the founding members of Fan Group 1
City Metropolitan Municipality	External	A governmental body (a.k.a. Municipality of City). It is responsible for a wide variety of areas including, but not limited to, environment, natural-gas supply, energy, infrastructure, planning and development, emergency and social services, investment and financial services, licensing and transportation services, waste management and construction projects in The City.	2 Representatives: The communications manager, and a staff of the municipality who served as a city planner
Construction Field Manager	Internal	The Club employee who is a senior civil engineer, assigned as a construction field manager for the project.	1 Representative: Construction Field Manager
Consultant Project Manager	Internal	A third-party project management and services company specialized in project implementation controls and process improvements for the industrial construction industry in The City, Club Country.	1 Representative: The head of projects who has extensive experience in mega projects, joined the project management team as a consultant.
Council Board Member of The Club	Internal	An advisory body of The Club, as well as the decision-making and internal control body authorized by statute.	1 Representative: A member of the council board
Directorate of Water	External	A governmental body (a.k.a. The City Water and Sewerage Administration), which falls under the ministry, manages the	1 Representative: The General Director of "The City Water and Sewerage Administration"

(continued on next page)

Table 2 (*continued*)

Stakeholder Group	Stakeholder Category	Stakeholder Group Description	Number of Representatives Interviewed and Representative(s) Description
		city's water resources, including the treatment and distribution of potable water, the collection and treatment of wastewater, and the construction and maintenance of water and sewer infrastructure.	
Main Contractor	Internal	A firm that is responsible which is responsible for overseeing all aspects of the project, including design, engineering, procurement, construction, and commissioning and hiring and managing subcontractors.	1 Representative: The general manager of the main contractor firm
Mechanical Project Controller	Internal	The Club employee who was responsible for managing and coordinating the design, installation, and operation of mechanical systems and equipment, such as heating, ventilation, and air conditioning (HVAC) systems, piping systems, and other mechanical systems.	1 Representative: Mechanical Project Controller
Media	External	A reporter in mainstream news media	1 Representative: A columnist in mainstream newspapers who has 20 years of experience in mainstream media, also worked as journalist, a The Club reporter. and TV commentator
NGO	External	A member of a non-governmental environmental organization that works to protect the environment and promote sustainable development in Club Country. The organization focuses on several key areas, including deforestation and biodiversity, support wildlife conservation.	1 Representative: A member of a non-governmental environmental organization that works to protect the environment and promote sustainable development in Club Country.
Senior management of the Project Owner (The Club)	Internal	The Project Owner is The Club Football Investments Industry and Trade Inc., is a publicly traded company in Club Country that primarily operates as the parent company of The Club.	1 Representative: The vice president of The Club
Sponsor	Internal	One of the biggest communication companies of the world in terms of revenues. It is the main sponsor of New Stadium, which inked a 15-year long sponsorship deal for close to $150 million. The sponsor received the naming rights to New Stadium and jersey advertisements.	1 Representative: General Marketing Manager. A person also has his own engineering company that became a solution partner to design and install high-tech HVAC and other engineering solutions at the stadium.
Sub-Contractor A, B, C, D	Internal	Specialists in their field. Each was hired to perform different tasks namely, plumbing, electrical work, concrete pouring, and roofing. They were selected through a bidding process/	4 Sub-Contractors
Total			*20*

second-order themes. For example, several discretionary actions could be conceptually grouped in stakeholders' willingness to temporary reduce value to themselves, assume risk that would normally be carried by the project, contribute to the project through hard work (sweat equity), and even temporarily accept changes to one's identity by adjusting goals, values, and principles. We categorized the mechanisms of how these discretionary actions led to project resilience in three overarching themes, i.e., by quantity (power in numbers), by getting critical issues to the right people (boosting), or through engagement (mindset shift). By comparing and further abstracting our second-order themes, we arrived at our aggregate dimensions of MCB and critical transition mechanisms, which form the key elements of our emerging theoretical model.

Each step of the data analysis and collection helped us build a data structure by progressively abstracting the data from first-order concepts into second-order themes and aggregate dimensions. Throughout this process, we constantly compared emergent findings with data across stakeholders and across the different UEs they faced. As aggregate dimensions started to emerge, we also consulted the literature on project stakeholder management, citizenship behavior, and resilience, to determine if our concepts were new or whether there was precedent in the literature.

Once the aggregate dimensions were established, selective coding ensued by focusing only on data that related to the two aggregate dimensions (Glaser, B. G. & Holton, 2004). Fig. 2 shows the data structure, which illustrates the progressive abstraction of the data from participant-based, first-order concepts to more general, research-induced second-order themes, and even more abstract aggregate dimensions. It provides a graphical representation of how we progressed from raw data to first-order concepts to second-order themes and finally aggregate dimensions. The construction of this data structure figure enabled us to think about the data at a more theoretical and high level (D. A. Gioia et al., 2013).

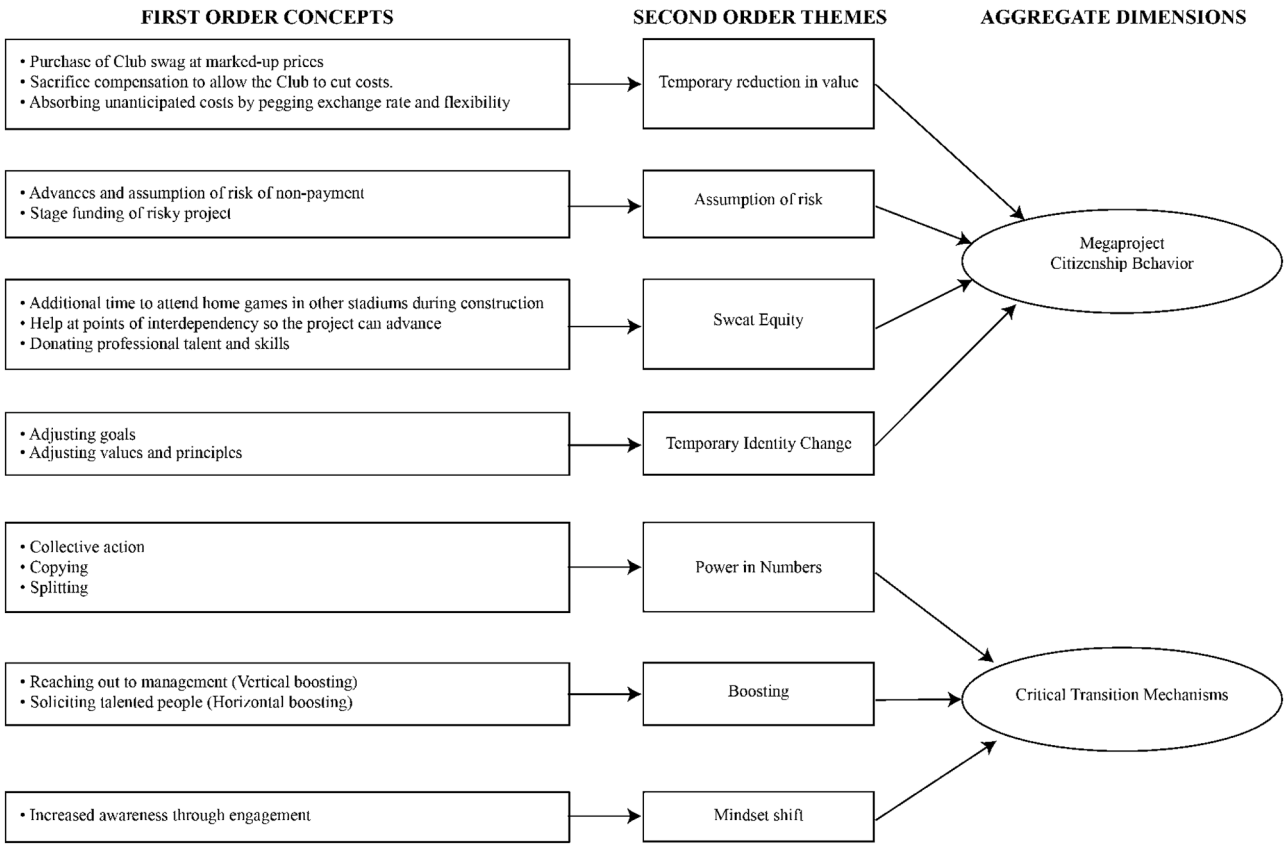

Fig. 2. Data Structure.

4. Results

Our analysis yielded two aggregate dimensions: Megaproject Citizenship Behavior (MCB) and Critical Transition Mechanisms. Appendix B presents representative quotes that substantiate the first-order concepts and second-order themes we identified. It serves as additional supporting data, allowing the interested reader to discern the evidence for our findings.

4.1. Aggregate dimension 1: megaproject citizenship behavior (MCB)

Megaproject Citizenship Behavior is non-contractual, voluntary, extra-role behavior observed across internal and external stakeholders which have a positive impact on project outcomes (T. Braun et al., 2013; He et al., 2015; Yang et al., 2018, 2020). Our data revealed many instances of such discretionary behaviors across internal and external stakeholder groups in response to the three major UEs introduced in the Contextual Background section. By searching for similarities and differences between these discretionary behaviors, we grouped these instances in four types of MCBs: Temporary Reduction of Value, Assumption of Risk, Sweat Equity, and Temporary Identity Change.

4.1.1. Temporary reduction in value

One of the citizenship behaviors we observed in the construction of New Stadium was stakeholders' willingness to temporarily reduce value to themselves to help The Club overcome financial difficulties. Stakeholders did this either by paying high markups for Club merchandise or by reducing costs for The Club by 1) accepting lower compensation and 2) absorbing costs. The examples below demonstrate how different stakeholder groups were willing to reduce value for themselves to help The Club. Fans purchased marked up merchandise, soccer players voluntarily revised contracts, and contractors and suppliers agreed to dollar and euro pegs, maintaining the value of the CCC a fixed exchange rate to the USD and EUR. These MCBs helped the project overcome negative consequences from unexpected cost increases and avoid project delays.

4.1.1.1. Purchase of club swag at marked up prices. In Year 0, before the start of the New Stadium construction project, but with The Club already struggling financially, Fan 1, a fan of The Club, conceptualized a special season to boost togetherness and to support The Club financially through merchandise sales. He shared this idea on online fan forums where the response was overwhelmingly positive. Next, Fan 1 shared his idea with Fan 2, a graphic designer and supporter of The Club. Together they brainstormed for a theme and decided on "*Sacrifice*." Upon completing the design of the merchandise, fans reached out to The Club's management to formally adopt the *Sacrifice* campaign. The Club adopted *Sacrifice* as a part of the official marketing campaign for the Year 0 - Year 1 and Year 1 - Year2 seasons, to indicate solidarity and sacrifice for The Club. The campaign was later extended by the *"Be Proud"* campaign for the Year 2 - Year 3 season. During the campaigns, The Club raised the price of its official merchandise to increase income, and fans responded positively. The *Sacrifice* campaign proved widely successful, with customers purchasing 165,000 merchandizing goods during the first four months of the campaign, injecting The Club with a net worth of 2.5 million CCCs (Disguised national newspaper article

(Year 0) about The Club's financial issues). Overall, the fans' support was critical to help overcome The Club's financial difficulties as illustrated by the Construction Field Manager:

> *"But the main source of extra money indeed came from campaigns like Sacrifice and Be Proud. …The Club's fans played a significant role in helping The Club… They helped both financially and emotionally…" (Construction Field Manager)*

4.1.1.2. Sacrifice compensation to allow the club to cut costs. Typically, soccer players' salaries were paid in USD or EUR. However, since the CCC was devaluating faster than expected, the cost of the players' salaries increased for The Club. Players of The Club offered or accepted to receive their salaries in CCC instead, which was, in effect, a salary reduction. Other players agreed with a delay in payment. As a council board member of The Club noted:

> *"But first and foremost, the "Sacrifice Season" was something great…. Even the soccer players willingly revised their contracts with The Club, following the unstoppable plunge of the CCC against the USD…. The players (some of them) said: "OK, I want to change my contract, pay me the same amount in CCC"…. they voluntarily offered to accept a salary reduction… Some players had not received their wages for months, they said "it's OK, pay me later". It was unbelievable… It is difficult to explain this spirit or feeling… the spirit of sacrifice." (The Club's Council Board Member)*

4.1.1.3. Absorbing unanticipated costs by pegging exchange rate and flexibility. The effect of the devaluation of the CCC on The Club's costs elicited sub-contractors who had negotiated contracts in USD or EUR, to voluntarily peg the currency to a set value and to be flexible to meet project needs.

> *"They (referring to The Club, subcontractors and suppliers) decided to peg the currency to the US dollar at an exchange rate of 2 or 2.25 CCC per dollar. It was a win-win situation for everyone. Otherwise, no work could be done there. And, yes, they did it voluntarily. I mean the situation forced them to solve this problem together." (Sponsor)*

Contractual stakeholders were flexible in their policies to help the project. Examples of such flexibility were extensions of contractual clauses beyond the agreed-upon terms and generosity and tolerance by accepting material returns even when the returns were due to improper installation, misuse, or other user-related causes, and willingness to use more expensive materials to move the project along faster.

> *"Everyone really worked in dedication here. One worked to close the gap of the others, for example, during installation of pipes, someone broke a pipe while walking on it… and then the supplier took it back, reworked it without complaining, and they did not ask for any extra money. I mean, for example, the generator company, like many other companies, they were a sponsor, but when we said to them, "we need extra materials", they delivered… Also, they did not question returns. We said to them to take these materials back, they took those back. I don't know if they could sell it again to someone or not. For example, the pipe was broken… As I said, because of The Club being the subject, there were many people who dedicated themselves, by pushing money into the background." (Mechanical Project Controller)*

4.1.2. Assumption of risk

The second MCB we observed in the construction of New Stadium was stakeholders' willingness to assume risk that normally would be carried by the project. Stakeholders accepted payment delays with the risk of not being paid at all (contractors) and agreed to non-conventional financing methods for the megaproject (bank), ameliorating the cost increases the project faced.

Advances and assumption of some risk of non-payment. A sub-contractor described how payments from The Club were delayed, but how this did not affect the sub-contractor's willingness to work on the project.

> *"I know that the company I work for did not get paid for a long time, for months. However, our boss did not halt the project work. And we, including our workplace, technical personnel, always got paid on time. He said that even if The Club does not pay me, we will finish it." (Sub-Contractor D)*

4.1.2.1. Stage funding of risky projects. The Club's worsening financial situation had led to banks refusing to lend additional credit. The Club's collateral offer was a future payment by the main sponsor of 7 million EUR annually for the stadium's naming rights. However, with The Club's deteriorating financial situation, the prospect of the stadium finishing and the main sponsor paying was less certain. Banks eventually offered a special finance model to The Club to make it possible to finance the project. Banks agreed to out-of-the-norm conditions on the credit agreement such as making partial payments after auditing the progress of the construction work. As explained by The Club's vice president:

> *"By considering all these things (financial situation of The Club), the banks said: "You cannot finish here. If you can't finish, the credit we give you will be lost" etc. …. And we said: "You give us the credit, make the promise, give the money to the sub-contractors, step by step, after they complete 10 dollars' worth of work, you give them $10". So, if a company (subcontractor) does the stairs, once the job is done, come here and see with your own eyes, and if it is $50, then give the money, $50. Then we did it like that". […] After that, the banks started to say: "Alright after you install the glass, we will pay for the glass; after you finish the doors, we will pay for the doors, etc." I found that this financing model; at the beginning they did not accept it…. but after they saw that we were making progress with the construction, they started to help us too by accepting our financial payment proposal". (Club Vice President)*

4.1.3. Sweat equity

The third MCB present in the data was the investment of extraordinary time and effort to the benefit of the project and The Club. This "sweat equity" included fans' willingness to purchase season tickets and invest additional time to travel to attend home games while home games could not be played at the stadium, contractors' willingness to help each other by overcoming project bottlenecks, and stakeholders' donation of talent and skill. These MCBs helped cope with the increases in cost and duration that the project faced due to the three UEs we described.

4.1.3.1. Additional time to attend home games in other stadiums during construction. During demolition of Old Stadium and construction of New Stadium, The Club's soccer team had to play its home games in other districts in The City as well as in other cities. In addition to committing to season tickets, fans tried to attend The Club's home games hosted in other stadiums, which were located further away, until the construction of the New Stadium was complete.

> *"During the construction years, we played our home games in other soccer teams' stadiums, in different cities or other districts in The City…. Although, on paper it looks like this is your home game, the reality is you are a guest…Supporters felt like they were a guest at someone's home for 2 years… In our case, it was even more difficult for us since we live in USA, we work here, we can maximum attend 2–3 games a season. We were arranging ourselves to take another plane in Club Country to go to City 2, or we were having less time to spend with our families and friends… For example, if I stay in District 2 in The City, it was just taking 10 min on the ferry to arrive at the stadium. But, if the team plays in Stadium in City 2, it takes 3 h to go, and another 3–4 h to turn back home… so you need to give up your whole day to watch and support The Club."*

4.1.3.2. Help at points of interdependency so the project can advance. Contractors and their workers based their working hours on what the project needed to advance the project rather than what would be a regular workday or work week, even if that meant doing others' work. Contractors indicated their workers put in extra hours and contractors provided resources to help others so that they could do their own work, which could not start until the other work was finalized.

> *"We did not keep books of how many hours we worked, overtime, no Sundays, no weekends. Other workers did the same thing. Why were we doing this? Because as you said, this is a big project, of course it is encouraging to be a part of this project. That prevents you to feel any fatigue. Now, I am astonished at how I could do all these things, with 3–4 h of sleep a day. But it is a different feeling…" (Sub-Contractor D)*

4.1.3.3. Donating professional talent and skill. The impact of the *Sacrifice* campaign extended beyond direct financial contribution. Some famous The Club Country National singers who happened to be fans composed songs for The Club for free and allowed The Club to release a royalty-free album named "*Sacrifice*." Other examples included a movie director who shot a free video for The Club, a famous singer who performed a concert that required purchasing and wearing a *Sacrifice* t-shirt for admission, and a designer who created merchandise for the *Sacrifice* campaign. Once again, this demonstrates the wide-ranging feeling of unity.

> *"While most fans contributed through purchasing merchandise, other fans provided value to The Club in other ways. Some famous The Club Country National singers who happened to be The Club's fans composed songs for The Club for free and allowed The Club to release a royalty-free album named "Sacrifice." All income from sales of the CDs were donated to The Club. The Club president encouraged other professions to contribute in any way possible. For example, a movie director then offered to shoot a video for The Club and a famous singer offered to perform a concert where the only admission was to purchase and wear a Sacrifice t-shirt." (Disguised regional online press release (Year 0) focused on the benefit concert for The Club (wear and buy Sacrifice t-shirt to enter))*

4.1.4. Temporary identity change

The fourth MCB we observed related to a willingness to temporarily adjust goals, values, and principles to achieve project objectives in the face of UEs.

4.1.4.1. Adjusting goals. The Club had to change to overcome the project's UEs. The Club had to temporarily adjust its goals, as it had to sacrifice on its long-held goal to win the The Club Country championship each year.

> *"The Club also had to change its goals and strategies… The Club, we had to sacrifice too…We had to focus more on financial success rather than sportive success for the next 2 seasons. We had to sell our best players to other clubs, while other teams were strengthening, we had to sell Soccer Player 1 too. Soccer Player 1 is a very important and special player, you never want to sell him. Unfortunately, The Club had to change the squad for the new season, because The Club had to cut expenses and generate additional income. At the start of each season the ultimate aim of The Club is, with no doubt, to be champion… It wasn't easy." (The Club's Council Board Member)*

4.1.4.2. Adjusting values and principles. The Club also revised its long-held principles and goals. Historically, The Club did not accept donations from supporters. Aware of The Club's financial situation, fans had been trying to help by asking The Club to "Open a bank account for donations and let us help you." (Disguised national newspaper article (Year 0) about early The Club soccer player who was also The Club's first captain and manager.) The financial situation eventually forced The Club President to revise this principle. He took time to attend Gala of the US-based supporter organization in Year 3, where he was presented a check for $15,000 to help with the stadium.

The vice president of The Club USA elucidated by saying that:

> *"The Club is a big family and wanted to build the stadium with their own money and complete the project accordingly. Of course, it is a cultural thing as well. Taking donations is not generally accepted in Club Country. Since we are a family member of The Club that was not a big deal. Because we are, as an association, socially responsible too. Years prior to the donation for the New Stadium, we had also done donations to support a junior (under 18 years old) soccer team and donated to The Club's physically handicapped basketball team, and so on. Those prior donations may have made The Club feel more comfortable." (The Club USA)*

4.2. Aggregate dimension 2: critical transition mechanisms

The MCBs described above were selfless actions by individual stakeholders. However, the sheer magnitude of the project made it difficult for individual and peripheral stakeholders to make a significant impact. Our data suggests something else is going on that connects these individual-level MCBs to megaproject resilience. *Critical Transition Mechanisms* are mechanisms that scale MCBs to a level that profoundly impacts the project's ability to bounce back, thereby enhancing project resilience. By engaging in the process of searching for similarities and differences between these scaling mechanisms, we identified three types of *Critical Transition Mechanisms*: Power in Numbers, Boosting, and Mindset Shift.

4.2.1. Power in numbers

The first Critical Transition Mechanism is *Power in Numbers*. The idea behind *Power in Numbers* is that one individual stakeholder's MCB, while positive, may simply not have a large enough effect to significantly impact megaproject resilience. However, if that MCB spreads to a multitude of stakeholders, the collective effect can more significantly increase megaproject resilience. Our data revealed three mechanisms through which MCBs can spread from one or a few stakeholders to legion: *Collective Action, Copying, and Splitting.*

4.2.1.1. Collective action. When not one, but many, participate in a certain action, the positive effect of the collective citizenship behavior becomes transformational to project resilience. For example, when one or a few fans purchase marked up merchandise, this is helpful, but it would not have a strong impact on project resilience However, if a critical mass of fans collectively engages in this action, this will significantly contribute to project resilience. As illustrated by a Construction Field Manager, fans purchased marked up merchandise in droves. There were queues of fans in front of sales trucks, ready to help The Club by spending their money when it faced the financial UE:

> *"One t-shirt with a 'Sacrifice' print, was 30 CCC at The Club's official store, at that time you could buy a regular t-shirt for 6–7 CCC, but it sold more than 200,000 pieces in a short period of time, like 6–7 months… I bought and gave some as gifts to my friends, they knew I worked here. The Club's sales trucks were stopping here, there was a queue in front, every time. Later, Be Proud, the subsequent campaign in Year 2, Be Proud products sold out in short time too. They have always received support from the fans." (Construction Field Manager)*

Another example of the impact of collective action on project resilience is the work done by the City Metropolitan Municipality (CMM). The CMM owned the area surrounding the stadium and was responsible for landscaping and stone pavement work around the stadium. This work would normally be done in the final stages of a construction project. CMM observed that some construction teams were having difficulties finishing their work on time. CMM workers voluntarily helped

construction teams when they were qualified to do so. CMM initially assigned 20–30 workers, but this number steadily increased to 400–500 and even more than that the last few days before the opening of New Stadium. CMM employees contributed via long hard work hours to enable The Club to open the stadium on the announced date. Several stakeholders acknowledged the contribution of CMM, comparing their presence to the swarming of ants.

> *"CMM employees were like ants. During the last 2 weeks, they worked non-stop. If one of the construction teams had a problem, they rallied around them. CMM mobilized all its labor power especially the last 2–3 days… Their numbers reached 700 or 800. It was difficult to count, but there were at least 700 of them." (Consultant Project Manager)*

4.2.1.2. Copying. *Power in Numbers* also manifested in our data through *Copying*. Essentially, *Copying* occurs when the MCB of one inspires others to copy those actions, and this copying behavior results in increased project resilience through spreading the MCB. We could see this with the willingness of soccer players to revise their contracts in response to The Club's financial issues (Financial UE). The below quote illustrates how the older soccer players set the example by reducing their contractual fees and the younger soccer players copied this behavior by following this example.

> *"We rearranged the terms of the contract with some soccer players. Between those players, a very young one, Soccer Player 2, he also came himself voluntarily and stated that he is willing to reduce his salary like his elder brothers (referring to older players). Some players decided to reduce their guaranteed contract fee, some players reduced their per match fee which means they fixed the bonus amount for every match in which they appeared." (Club Vice President)*

We also saw *copying* when many of the subcontractors' workers opted for modest and inexpensive lunches out of solidarity with The Club, knowing that soccer players had voluntarily changed their lunch menus to cheaper items to help The Club overcome its financial situation (Financial UE):

> *"So many times, we had modest and inexpensive lunches on the site too, voluntarily, to help The Club to decrease the expenses. This also made the people feel special since they were eating the same meal as Soccer Player 3." (Consultant Project Manager)*

4.2.1.3. Splitting. Stakeholders were also able to increase the number of stakeholders exhibiting MCB through *splitting*. *Splitting* is when one stakeholder causes multiple other stakeholders to act, like a domino causing two other dominos to topple, which cause four dominos to topple, etc. We can see an example of *splitting* when the media got involved and quickly spread awareness of the transparent building element's potential to cause bird strikes to a large number of stakeholders (Social Responsibility UE). The message initially started with a key person. The media reported on the issue widely, creating *splits* that enabled the spread of this knowledge with a wider audience.

> *"There is a key person, he creates an awareness first, then media circulates this as news and then spreads it to the whole society." (Sub-Contractor D)*

We also saw the mechanism of *splitting* when the *Sacrifice* campaign was shared on online Fan Forums (Financial UE).

> *"Our friends, the supporters, created and initiated this campaign for The Club … to promote, or rather, boost togetherness within The Club's family. The Club is a very big family with millions of members all around the world. … Fan 1 first shared his idea to consult other fans on Fans' Forums –Fan Forum 1 and Fan Forum 2— and received positive reactions on the social platforms." (Fan Group 1)*

Finally, we also saw *splitting* when people took pictures with new safety signs that were developed after the workplace accidents (Workplace Accidents UE), which were displayed next to interesting Club facts. Workers took pictures with the signs and shared them on social media, creating *splits* that spread these messages wide and far.

> *"We liked those warning signs a lot. The statements on them were very touchy and we were proud again to be fans of this Club. …The Club's fans created their own versions of those signs and shared them on social media. We love our workers, they are brothers, we respect working class, and care about them too." (Fan Group 1)*

4.2.2. Boosting

Boosting is when a non-critical stakeholder causes a critical stakeholder to act, similar to a small domino toppling a larger domino. Boosting can occur in a vertical or lateral movement.

4.2.2.1. Vertical boosting. An example of *vertical boosting* is when stakeholders that were peripheral to the decision petitioned and convinced critical decision makers. The *Sacrifice* campaign was completely fan-initiated to help The Club raise funds (Financial UE), yet they needed The Club to formally adopt the campaign. Supporters were reaching out *en masse* to The Club's upper management, boosting the issue to a critical decision maker.

> *"Then, the supporters were trying to reach The Club's management and President in any way possible. Countless fans contributed to this process. At that moment, another Fan Group 1 member talked with The Club President and the Executive Committee Chairman, about this campaign. Eventually, it was implemented." (Fan Group 1)*

4.2.2.2. Lateral boosting. An example of *lateral boosting* is when stakeholders that are motivated to advance an issue but lack the necessary talent or skills to do so, reach out to others with the right talent or skill to help make progress. This occurred multiple times during the *Sacrifice* campaign to raise money (Financial UE), for example when a fan contacted another fan who was a graphic designer to design the t-shirt for the campaign.

> *"After receiving positive feedback on online fan forums, Fan 1 shared his idea with a graphic designer who is also a supporter of The Club. Together they brainstormed about what the theme should be. They ultimately decided on "Sacrifice." Sacrifice was a tribute to the founder of the soccer branch of The Club, whose last words were about sacrifice.*

4.2.3. Mindset shift

The final sub-mechanism of *Power in Numbers* is *Mindset Shift.* The workplace accidents resulting in injuries of two workers and the death of one (Workplace Accidents UE), lead project management to attempt to increase safety on the work site. An interviewee remarked that one rule-breaking worker was all that was needed for problems to occur and that it was simply impossible to watch all workers all the time. Therefore, the focus needed to be switched to changing workers' mindsets rather than imposing more supervision and control. Rather than policing the behavior of individual workers, the idea was to engage workers with safety signage, establishing more of a collective culture of workplace safety.

> *"Especially, in Club Country, or in general, construction workers, they think "nothing can happen to us." Some do not fasten seat belt while driving too. The same applies here. So, we had to change that mindset. If you have 100 workers, and 99 of them are well-educated and obedient to rules, but just one of them is occasionally negligent, it can affect everything. Even if you have the best-qualified construction safety engineers and a sufficient number of them, you cannot watch all workers every second. We had 400–500 workers. So we prioritized changing that*

mindset after injuries, we contemplated three days with other construction parties [contractors]." (Consultant Project Manager)

Construction sites have numerous safety precaution signs, but these often fail to get workers' attention. Therefore, the management team floated the idea to catch worker attention through Club facts flashing on "smart signboards". The smart signboards engaged workers, many of which were also fans of The Club, because they were linked to Club achievements. The previously "invisible" safety signs became the center of attention. The program turned out to increase awareness among workers:

"I think it was a great solution, I haven't seen it before in any other construction site. I may suggest using the same strategy in my next projects…Simply, putting witty statements below the existing signboards to support the signboards. First, it created awareness among the workers on the site. No one said anything about those to the workers, we wanted them… [to] explore it. They all were surprised the first day, they took selfies with signboards, took pictures of them, and started to talk about them, making jokes etc. In my opinion it was a very successful project. It was more effective than merely warning workers. Plus, it put a smile on their faces, created a positive environment" (Sub-Contractor C)

5. A grounded theory of megaproject resilience

Our findings suggest that one way in which resilience at the megaproject level can be improved is by scaling the impact of MCBs by internal and external stakeholders through critical transition mechanisms. The data structure in Fig. 2 displays the key concepts that emerged from our data. In this section, we add the interrelationships between MCBs, critical transition actions, and megaproject resilience. The core of our theoretical model is that megaproject resilience improved when individual MCBs went through a critical transition to become group MCBs, were brought to the "right" individual, or led to mindset shifts in groups. If one compares a small project to a bucket and a megaproject to a lake, it can be extrapolated that "ripples" symbolizing single MCBs may significantly impact smaller projects (buckets), but that "a wave" of MCBs is needed for an observable impact on megaprojects (lakes). Thus, while MCB in and off itself can be positive and may resolve relatively small, local problems in a megaproject, our data suggests that megaproject resilience is affected through MCBs that are present in large numbers, are boosted, or have the potential to lead to mindset shifts within a large percentage of a stakeholder group.

Fig. 3 pictures the aggregate dimensions and second-order concepts we identified in a theoretical model that illustrates how critical transition mechanisms amplify MCBs, thereby affecting megaproject resilience. The four MCB categories present in our data consist of: "temporary reduction in value," "assumption of risk," "sweat equity," and the "temporary identity change." In addition, we found three Critical Transition Mechanisms in our sample which seemed to scale the individual MCBs to impact i.e., through "Power in Numbers," "Boosting," and "Mindset shift."

The first mechanism is "Power in Numbers," which scales the impact of individual MCBs by multiplying this behavior in others through collective action, copying, and splitting, essentially leading to the emergence of a *group* MCB. To go back to lake analogy, the MCBs of one fan or one contractor can create a ripple in the lake, but the effect, given the mere size of the lake, is nearly invisible. It was when many fans or many contractors, or more generally many stakeholders within a group, exhibited these MCBs that we noticed the megaproject bouncing back after facing UEs. The specific concepts of the "Power in Numbers" critical transition mechanism which can turn singular actions into group behavior are Collective Action, Copying, and Splitting. Collective action occurs when large numbers of people collectively participate in a MCB, such as the fans purchasing marked up merchandise in droves and the CMM workers showing up in large numbers and helping wherever there was a need. Copying occurred in our sample when the MCB of one inspired others to copy them. Examples of copying from our data set were soccer players volunteering to have their contracts adjusted after a few soccer players set that example, and workers adopting "modest and inexpensive" lunches out of solidarity with the soccer players' reduced cost lunches. Splitting is when the MCB of a stakeholder causes multiple other stakeholders to act, similar to a domino causing two other dominos to topple, which then topple two dominos each etc. Examples of splitting are the viral spreading of information through media and via online fan forums, turning singular knowledge or action into legion.

While one fan's purchase of marked up merchandise and season tickets, one contractor's willingness to help other contractors in order to resolve project bottlenecks, one soccer player's offer to revise their contract, and one environmentalist's cries for attention to a building element prone to bird strikes are all valuable MCBs which can contribute to resolving small and local problems in projects, it is the spreading of these MCBs to a multitude of stakeholders which increases megaproject resilience. While the MCBs started at the individual level, we noticed that they spread to the group-level through "Power in Numbers," drastically increasing the impact on outcomes. The "Power in Numbers"

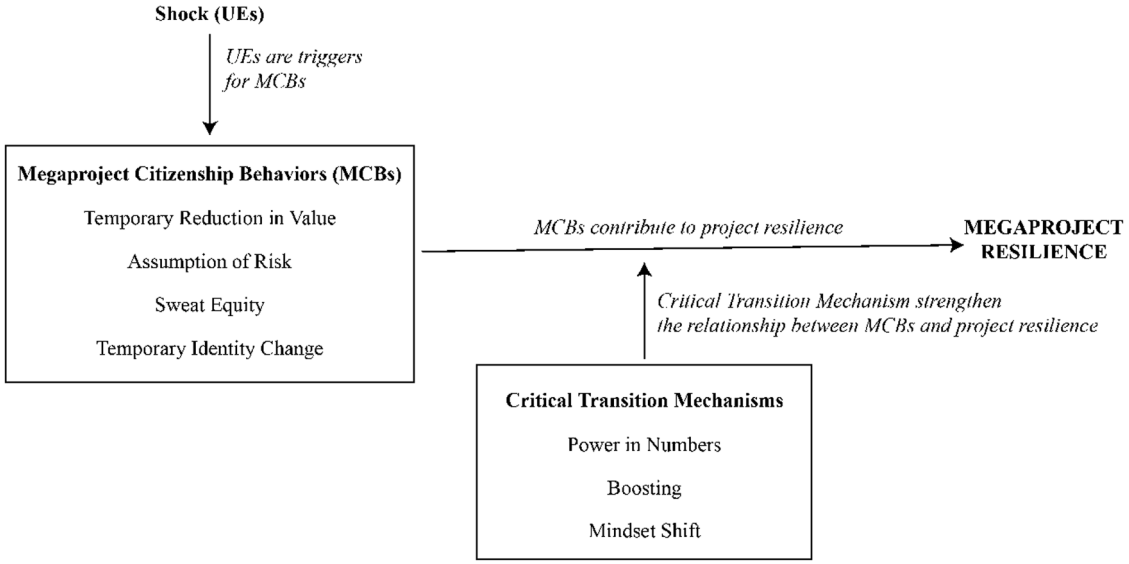

Fig. 3. A Theory of Megaproject Resilience.

mechanism explains how individual MCBs turn from ripples to waves and into something that is visible at the stakeholder *group* level.

The second Critical Transition Mechanism is "Boosting." "Boosting" happens when a stakeholder causes a critical stakeholder to act, similar to a small domino toppling a larger domino. Boosting can occur in a vertical or lateral movement. "Boosting" increases the impact of individual MCB by essentially getting the issue to the right person to advance the issue, either higher up in the decision-making chain (vertical boosting) or to a person that has the right talents or skills (horizontal boosting). To draw again on the analogy with water, the "Power in Numbers" mechanisms considered "how many drops?" whereas boosting is related to "which drop?" No individual drop of water will cause a big change in a bucket, with exception of that one drop which makes the bucket overflow. Boosting is about getting an issue to the "right" person, the drop that makes the bucket overflow, the one with the influence or decision-making authority needed to decide about a course of action or the one with the right skills and talents to take the next step needed for progress.

The third identified Critical Transition Mechanism, the "Mindset Shift" mechanism, scales the impact of individual MCBs by increasing *group* awareness through engagement. In the case of our study, a mindset shift occurred which involved changing workers' mind about safety signs, affecting the way workers thought about safety signage as a group and reducing the need for individual monitoring. By internalizing the idea that workplace safety is an individual and collective responsibility, the likelihood of preventable workplace accidents occurring was reduced more effectively than by having to monitor individuals' behavior. The mindset shift took place through engaging people by combining information that they connect with (witty statements about their Club) with information they may feel less connected to (safety signs), but which is important to the success of the megaproject. The original placement of safety signs was essentially invisible to the workers, who paid them no attention. It is only when a majority of workers pays attention to safety signs that they will have an effect on overall safety. Since there is no way to monitor each worker, the safety of the site can only be guaranteed by the right mindset in the workers as a group. The choice to combine these important signs with something the workers were interested in, helped create a shift in workers' mindsets from disengaged and uninterested to engaged and aware. To go back to the water analogy, a mindset shift could be compared to the different states of water (solid, liquid, or gas). Requiring a change in state from solid to liquid to gas requires energy just as changing a mindset requires overcoming resistance in how people think about an issue. The bigger the required mindset shift, the more engaged the stakeholders will need to be.

6. Discussion

6.1. Theoretical implications

We developed a grounded theory of megaproject resilience explaining how MCBs coupled with critical transition mechanisms can help megaprojects bounce back from UEs. Our findings contribute to three areas in the project management literature.

First, the main contribution is to the growing literature on project resilience, and more specifically, megaproject resilience. As prior literature has established, we find that MCB can positively affect project outcomes (e.g., T. Braun et al., 2013; Ferreira et al., 2013; Guo et al., 2019; Shafi et al., 2021). However, an important proposition of our theory is that while stakeholder citizenship behavior alone can lead to project resilience for small and medium-sized projects, individual MCBs alone may fail to sufficiently move the needle for *mega*projects due to their sheer size and unique challenges (Braun et al., 2012; T. 2013; Ferreira et al., 2013; Yang et al., 2020). In that light, our data revealed three Critical Transition Mechanisms that enabled magnifying the impact of individual MCBs: Power in Numbers, Boosting, and Mindset Shift. Our Critical Transition Mechanisms find parallels to L. Wang et al. (2021) and Yang et al. (2018) contention that resilience in megaprojects is subject to the joint efforts of many stakeholders. We hope that these three mechanisms can serve as building blocks for a theory on how individual MCBs can be scaled to impact for megaprojects.

The Power in Numbers and Mindset Shift mechanisms provide insight into how OCB manifests at different levels. The only other empirical study which seemed to look at multilevel relationships of OCBs was Bommer et al. (2007). They found that under the presence of strong group-level OCB norms, an individual's OCB is less distinctive and did not impact ratings of job performance as much. An example of group level OCB is when one work group takes fewer work breaks than other work groups in an organization (Chen, Lam, Naumann & Schaubroeck, 2005). So in this case, an individual taking fewer work breaks who is part of a group who tends to take few work breaks will not see this reflected in ratings of their job performance to the same extent than an individual taking fewer work breaks who is part of a group who tends to take more work breaks. As such, Bommer et al. (2007) found that group-level OCB moderates the relationship between individual-level OCB and individual performance. In our study, we found that individual MCBs can be a seed which can grow into group MCBs through Power in Numbers or Mindset Shift, turning individual MCBs into *group* MCBs which in turn have the ability to impact megaproject resilience.

The boosting mechanisms are about getting an issue from non-critical or peripheral stakeholders into the hands of stakeholders that are in a position of decision making or who possess the right talent and skills to advance an issue. This perspective seems absent from the current literature on MCB and megaproject resilience and may be linked to literature on networks, which shows that "being in the right place" has a positive effect on the influence one has within an organization as well as promotions (Brass, 1984). Similarly, "boosting" the issue to an influential person in our data got the issues related to the transparent building element the attention it deserved. Network studies have highlighted the relationship between personal networks and resilience on multiple levels (Aldrich, 2012; Gondia, Ezzeldin & El-Dakhakhni, 2022; Herbane, 2018). Our study adds to these literatures by showing to concrete ways in which internal and external stakeholders can call on each other's networks to address threats to a project's iron triangle by finding the most optimal person to deal with the issue.

The Mindset Shift mechanism also does not seem to be present in current debates and may be related to the literature on managerial cognition such as managerial heuristics (Abatecola, 2014; Bingham & Eisenhardt, 2011; Sheth & Sinfield, 2022) and cognitive inertia (Tripsas & Gavetti, 2000), which is inertia related to how an individual thinks about an issue. In this case, workers' disregard for safety signs threatened the project by an increase in workplace accidents. The witty and engaging approach to the safety signs helped bring safety issues to the forefront of the minds of workers as a group.

Second, our study makes several contributions to the nascent literature on MCB. The strong presence of MCB across stakeholder groups in our sample reinforces prior findings that the temporary nature of projects may motivate stakeholders to collaborate more through shared responsibility of a common goal and the visibility and prestige of a megaproject like New Stadium (Braun et al., 2012; T. 2013; Ferreira et al., 2013; Yang et al., 2020). We note similarities between our MCBs and Yang et al. (2018) categorization of MCBs. For example, their "contingent collaboration behavior" corresponds to one of the ways in which our construct of "sweat equity" manifested itself, i.e., when contractors helped each other at points of interdependency to overcome project bottlenecks. Yang et al. (2018) category of "conscientiousness behavior" also relates to our second order concepts "temporary reduction in value" and "assumption of risk." Our findings call for an expansion of the citizenship construct to include the contributions of external stakeholders (i.e., non-project or non-organizational members). Our data includes many strong, voluntary responses to UEs by a broad range of internal and external stakeholder groups, demonstrating how

collaboration between stakeholders and stakeholder engagement (Aaltonen & Kujala, 2010; Morkan et al., 2017; Walker & Lloyd-Walker, 2016) can help projects cope with uncertainty and UEs. To date, studies of projects and MCB have principally focused on the citizenship behavior of a limited set of internal stakeholders (i.e., the project manager and project team members), while citizenship behavior of external stakeholders has been mostly neglected in previous research (Braun et al., 2012; T. 2013; Yang et al., 2018, 2020). A key finding of our research is that citizenship behaviors contributed by external, as well as internal, stakeholders played an important role in megaproject resilience (see also Yang et al., 2018). Thus, traditional views of organizational and project citizenship behavior which define citizenship behavior as voluntary, extra-role behavior by organizational or project members (e.g., project managers and project team members), may benefit from looking at the behaviors of a broader group of stakeholders.

Third, our findings make an important contribution to new and emerging stakeholder theory focused on the importance of collaboration with stakeholders to increase project resilience (Aaltonen & Kujala, 2010; Walker & Lloyd-Walker, 2016) and the overall benefits of stakeholder enfranchisement to organizations and megaprojects (Gil & Fu, 2022; Klein et al., 2019; McGahan, 2021; Signori, 2017). As stakeholder theory moves away from the management *of* and *for* stakeholders towards managing *with* stakeholders, stakeholders become agents and resources in the quest for project success. Our findings illustrate that stakeholders are a critical, yet often untapped, resource when projects face UEs and that megaprojects are more resilient when stakeholders engage in MCB and critical transition mechanisms emerge to scale that behavior. In addition, our study suggests that it might makes sense for megaproject managers to consider ways in which they can engage *external* stakeholders by making them more legitimate holders of decision rights when megaprojects face UEs (Klein et al., 2019). This perspective has been largely absent from the research and practice discourses on project management and project resilience (Di Maddaloni & Davis, 2017, 2018) including the literature on stakeholder enfranchisement which tends to focus more on external stakeholders directly involved with the project (e.g., government), but not those indirectly involved (e.g., affected communities) and which does not typically consider how such external stakeholders can increase project resilience.

It is important to note that the resilience of mega-projects pertain to the overall ability of the mega-project itself to endure, recover, and continue progressing despite various challenges and unexpected events. It encompasses not only the resilience of the plans but also factors such as stakeholder management, resource management, and risk mitigation strategies. In other words, the resilience of the plans specifically relates to the adaptability and robustness of the project's plans, while the resilience of the mega-project encompasses a broader perspective, considering the project as a whole and its ability to persist and thrive in the face of unexpected events.

6.2. Implications for practice

Our work yields several managerial insights that can augment megaproject management and resilience. First, our findings contribute to managerial practice by illustrating how project stakeholders operate in practice, which we find diverges somewhat from the dominant views and assumptions in the literature. It is found that stakeholders can serve as an important resource to project managers facing UEs. This view is a novel addition to that of stakeholders as clients. Our study suggests that megaproject resilience may be strengthened when managers take an approach that enables stakeholders to increase their agency in projects, and their sense of ownership of the project. In other words, project managers should focus on harvesting the benefits of stakeholder agency over stakeholder control. Managers of megaprojects should be aware of emerging voluntary behaviors by stakeholders and focus on removing barriers that may prevent their scaling, thereby enabling the critical transition mechanisms to play out.

Second, citizenship behaviors were found to occur among a diverse set of non-contracted (external) stakeholder groups. As discussed by D. Yang et al. (2020) megaprojects always carry great social significance and symbolism, so people feel proud of taking part in such projects. The decision to participate in a megaproject is often motivated by the desire to improve long-term social values or by public recognition (Li & Liang, 2015). As discussed by Xing and Chalip (2009) participants tend to voluntarily exert extra effort in their pursuit of social value (Xing & Chalip, 2009). The finding that citizenship behaviors can be stimulated among external stakeholders who are not formally invested has implications for resilience seeking managers who can proactively leverage external stakeholders' sense of social value to evoke citizenship behavior.

Third, the critical transition mechanisms we observed (e.g., power in numbers, boosting, and mindset shift) are managerial levers that can be utilized during the megaproject lifecycle. Managers can keep themselves abreast of opportunities where stakeholder attitudes and demands may aggregate to affect project resilience, either negatively or positively, and use their knowledge of these levers to guide the project towards resilience by either resolving potentially harmful behaviors quickly, before they attract mass attention, or promoting potentially beneficial behaviors to achieve a level of significance to the project.

6.3. Study limitations

Exploratory case study research has inherent methodological limitations (Yin, 2018). We employed several tactics to safeguard the quality of our exploratory case study research by optimizing construct validity, external validity, and reliability. Construct validity focuses on "identifying correct operational measures for the concepts being studies (Yin, 2018, p. 42). We employed two tactics to ensure construct validity (Yin, 2018). First, we used multiple sources of evidence, including media accounts, project documents and reports, company websites, press releases, and emails exchanged between different project stakeholder groups. We also sampled broadly and collected data from multiple stakeholder groups. Second, we established a chain of evidence to enable the reader to move from the research question to the case findings and back by making explicit the research methodology, quotes from participants, and the data structure and data table (Yin, 2018). External validity is concerned with the generalizability of the case study's findings. The size and idiosyncrasies of this megaproject may limit the relevance of the findings for smaller projects, which may or may not motivate the same categories of citizenship behavior and which may or may note evoke the same the scaling mechanisms. Our data may be different from other mega construction projects because of the connection to a soccer team with over 20 million fans. These fans describe each other as family and the soccer stadium as their home. Hence, the feeling of ownership and responsibility that stakeholders who are also fans have towards the project may explain the extent to which people were willing to engage in citizenship behavior. Accordingly, the critical transition mechanisms may be more difficult to engage in stakeholders who do not feel such ownership and responsibility, failing to lead to large enough numbers adopting citizenship behaviors, and therefore failing to affect megaproject resilience. It also remains to be seen if smaller or medium-sized projects need such scaling mechanisms or whether PCBs can positively affect project resilience by themselves. The UEs studied however, differed along several criteria such as timing, severity of potential consequences, affected project objectives, predictability, and cause of the UE (see Table 1). This methodological attribute may increase the generalizability of our findings to a range of UEs. In addition, we use several tactics to safeguard the study's ability to make *analytical* generalizations, which pertain to the empirical enhancement of theories by the case study findings, i.e., the modification or advancement of theoretical concepts or the emergence of new concepts (Yin, 2018). By moving to a higher conceptual level, we can make analytic generalizations related to how stakeholders' MCBs can increase megaproject

resilience. Indeed, we advance theory on stakeholder MCBs by demonstrating that external stakeholders were key contributors of MCBs, by providing insight into potential categories of MCBs, and by linking MCBs to project resilience through Critical Transition Mechanisms. This usage of theory is one tactic we employed to safeguard external validity. Finally, reliability is the demonstration that a study could be replicated with the same results. The tactics we employed to ensure our study was reliable included the usage of a case study protocol, the development of a case study database, and the maintenance of a chain of evidence through our data structure and quotes from the interviews, as discussed earlier. We also discussed in detail the procedures followed in our case study (Yin, 2018).

6.4. Future research directions

Our findings indicate that voluntary, non-contractual stakeholder responses (i.e., citizenship behaviors by internal and external project stakeholders) are necessary for project resilience. Future research focused on the antecedents of voluntary stakeholder responses would be beneficial to help project managers and organizations understand how they can motivate these voluntary actions proactively. For example, the establishment of a meta-mission for megaprojects (Huxham & MacDonald, 1992), especially those where there is public interest (Klosterman, 1980) may be one strategy for motivating stakeholder citizenship behavior. This research direction could be particularly useful for resilience studies in large-scale public projects where managers may capitalize on the contributions, skills and capabilities of diverse project stakeholder groups to cope with UEs and safeguard project resilience. Another potential antecedent of MCBs and/or critical transition mechanisms may be stakeholder enfranchisement. Project managers and owners may be able to support the emergence of MCBs and critical transition mechanisms by broadly and genuinely engaging stakeholders, as diverse and large groups of stakeholders can have different and impactful responses which can take the form of MCBs or transitionary behavior.

While several papers have begun to work on developing a taxonomy of organizational citizenship behaviors in projects or temporary organizations (Braun et al., 2012; T. 2013), several authors have noted that the megaproject context is vastly different with its increased complexity, high uncertainty, diverse stakeholders, and complicated inter-organizational relationships (Boateng et al., 2015; Clegg, Sankaran, Biesenthal & Pollack, 2017; Flyvbjerg, 2017). As noted by D. Yang et al. (2018), these factors shape disparate types of citizenship behavior that may differ from that found in traditional organizations and smaller, less complex, single organization projects. Thus, future research would benefit from the development of a taxonomy of the types of citizenship behavior one would expect to find in the context of megaprojects. Our research which identified how megaproject stakeholders engage in citizenship behavior and classified these behaviors into four different dimensions of MCB offers a starting point.

The critical transition mechanisms discussed herein are based on a single megaproject. These mechanisms and their effects on resilience should be verified across more projects of varying scope. Our paper serves as a foundation to this exciting avenue for the literature on megaproject resiliency.

7. Conclusion

The case of the megaproject (Year 1 - Year 4) was studied in the context of UEs that threatened its successful completion. We present a grounded theory of megaproject resilience in which we explain how MCBs, engaged in by both internal and external stakeholders, are leveraged via critical transition mechanisms to impact megaproject resilience. Citizenship behaviors contributed by internal and external stakeholders played an important role in megaproject resilience. Thus, our findings call for an expansion of the citizenship construct to include external stakeholders (i.e., non-organizational and/or non-project members) as well as internal stakeholders as contributors of citizenship behaviors. We also find that a key component of megaproject resilience is the presence of critical transition mechanisms to scale MCBs to a level of impact. Finally, project managers should manage *with* stakeholders because stakeholders are a valuable resource for project managers, which can be true partners and resources in the quest for project success. Our research contributes towards a better understanding of the role played by megaproject stakeholders and the processes they participate in when responding to UEs that enable megaproject resilience.

Declaration of Competing Interest

I hereby declare that there are no conflicts of interest.

Appendix A. Sample Interview Questions

Project background
What were your functions and responsibilities on this project?
What were key outcomes/expectations for you (your stakeholder group) with regard to this project?
Most Critical Unexpected Events
(The list of identified unexpected events will be shared with interviewee)
Can you verify the list and the timeline of the unexpected events? If you feel it is not accurate, what would you change?
Unexpected event (Description)

1. What was the response?
2. What was your involvement?

Please tell me about your experience dealing with this unexpected event.

1. Were there any others involved in responding to this event? (Will have diagram available of stakeholders that interviewee can use to identify others involved.)
2. How did these stakeholders work together to try and resolve this event?

How, specifically, did you/they try and resolve it?

1. Were there any major disagreements on how to resolve this event? If so, tell me what happened when there was a disagreement between stakeholders? How were conflicts resolved?
2. What actions do you feel were most successful in responding to this unexpected event?
3. What do you see as the specific cause of this particular unexpected event?
4. How has the experience with this specific unexpected event/response affected your organization in regard to your organization's relationship to others, if at all?

After interviewing for all the unexpected events

1. What are key lessons that you learned about managing unexpected events for this type of mega project?
2. Is there anything else you feel I didn't ask you that I should have asked?

Appendix B. Data Table for MCB and Critical Transition Mechanisms

Themes	Representative Quotations
Megaproject Citizenship Behaviors (MCBs)	
Temporary Reduction in Value	*Purchase of Club swag at marked up prices* "The Club made *Sacrifice* part of the official marketing campaign for the Year 0 - Year 1 and Year 1 - Year 2 seasons, asking fans for solidarity and sacrifice for The Club. This campaign encouraged fans to contribute in any way that they could. The campaign's motto was "Now, it's time to sacrifice." Later, this was extended by the "*Be Proud*" campaign for the Year 2 - Year 3 season. During these campaigns, The Club increased the price of The Club's official merchandise to increase income, and fans willingly purchased it to support to Club." (Construction Field Manager) *Sacrificing compensation to allow The Club to cut costs* "Some players sacrificed some portion of their salaries to prevent postponement of the construction when unpredictable increase in the exchange rate hit The Club's financial status. (Media) "Some players decided to reduce their guaranteed contract fee, some players reduced their per match fee which means their fixed bonus amount for every match in which they appear." (Club Vice President) "Besides, there were players such as Soccer Player 4 and Soccer Player 5 who willingly lowered their wages. In the season called "Sacrifice Season", The Club decreased expenses by 98.3 million CCC (Disguised academic publication (Year 4) focused on financial sustainability in soccer with The Club as case study.) "Nowadays, the reality is that The Club's economic situation is not good. If we buy lobsters, we have to leave…We cannot afford lobsters anymore…We have to choose either one or the other." (Disguised academic publication (Year 7) focused on The Club Country soccer fans and politics.) *Absorbing unanticipated costs by pegging exchange rate and flexibility* "Of course, I know, it affected The Club and others. Companies who buy materials made their agreements with foreign companies in EUR or USD. They did not at first peg it, but when such huge differences occurred, they negotiated it again and agreed." (Sub-Contractor D) "First and foremost, there was an option item in the sponsorship contract, the size of the matter came to the option item. Let me explain, so we made a 3 + 1-year contract. The contract runs for three years with an option to extend a further year. The option was about 3-year warranty, 1-year option. To use the option, it should be signed. The Club has even used the option of that one year. We turned a blind eye to it. With goodwill. We could say, sorry we are not giving a warranty after 3 years. Because of the technical reasons, as I just said, the budget has grown in this sense. The project budget has grown, it was also moved to the option year of sponsorship agreement, in the growth of the budget, we could not sign the option year because the process is very fast… Generally we do not sign this kind of options, but we did it happily. We gave them the extra year of warranty." (Sponsor) "Change of the membrane, there is a non-inflammable Polytetrafluoroethylene (PTF) material, and the other is silicon membrane, as we call it. We used the silicone membrane, because the silicone material is better and higher technology. So, it was a bit more expensive than the PTF material. We assumed this cost by ourselves. There is a 1–2 Euro difference, but we knew we could install it faster than the previously agreed-upon one. And we could tolerate some financial loses, but The Club could not tolerate delays. Yes, we gained time, but lost money, connections to suppliers of materials that were planned and made in advance were canceled because The Club decided to us another type of material we made previously were canceled. … Of course that affected us, I mean, the material change. Well, we did not lose time so much here, because, we had some time, we did not take the critical path (minimum time necessary to complete the entire project) too much, but as a result we had financial losses since the bonding technology is more expensive than other technology, the procurement of adhesives etc. There were additional costs we did not know of at the time. PTF was a well-known material. It was used in 4–5 stadium in Club Country, but this was a first in Club Country. So doing it for the first time meant that our membrane subcontractors had to learn the welding etc., import new machines, … A new machine means an additional cost of around 75,000 and 100,000 EUR to the membrane provider, and that caused us problem. However, we did it in a way The Club wanted, So, we lost some money." (Sub-Contractor B) "Plus, we did not do this work having any financial expectations. We gave these 21 persons and so we should receive a payment for it from The Club. And others did not expect financial gain too." (Sub-Contractor A)
Assumption of risk	*Advances and assumption of risk of non-payment* "They {The Club} gave us checks, but did not pay on time. We paid interest on those checks, all out of pocket, I mean we gave our own checks 1 month later in place of The Club's checks. Imagine, you are The Club, you gave me a check, you said your money will be paid 1 month later, and then I gave it to my supplier, but 1 month later supplier calls me to say that check is not honored. Then I am taking it back on my name and giving my check plus default interest so paying it out of my pocket, even if I did not get paid by The Club. These differences cost us quite a lot." (Sub-Contractor A) "Well, we could stop working and ask for the difference. Maybe some part of it would be given to us. But we did not want to do that. Again, we acted in coordination with The Club Construction Inc as our main contractor, and got back on the track. Well, at that time, we could have said: "If you pay late for these ropes, we shall claim compensation for the delays arisen there from. But instead, we behaved in a nice manner." (Sub-Contractor B) "This happens in every worksite, but here, we felt its weight more. Because I saw problems about the iron, diesel {due to a rise in iron and diesel prices caused by CCC's devaluation} and so on and on. When I asked 7–8 people, who were contracted stakeholders, who couldn't get the money, they told me. The same case is here again because the money to the suppliers wasn't paid. Or the money for the project, especially manufacturing works, were not paid on time… (Architect) *Stage funding of risky project* "While most banks were hesitating to finance The Club's stadium project, Bank 1 offered a special project finance model to The Club." (The Club's Council Board Member) "The stadium loan agreement we made started a long time ago and came into effect. Bank 1 showed great modesty and did not put any pressure on us to open New Stadium. They said, 'Let the stadium come out, our main intention is to finance the stadium." (Disguised online news article (Year 3) about the details of the financial agreement signed between Bank 1 and The Club)
Sweat Equity	*Additional time to attend home games in other stadiums during construction* "Another way in which fans "sacrificed" was by buying season's passes to attend games, despite the fact that it was uncertain where The Club would play its home games during construction of the New Stadium. Ahead of the last match in the old stadium, before demolition started, The Club and The Club

(*continued on next page*)

(*continued*)

Themes	Representative Quotations
	Country National Airlines, the national flag carrier airline of Club Country and a sponsor of The Club, placed metal plates with the names of the supporters who had bought season's tickets on the historical pathway to the stadium to thank them. Fans were able to take them home as memorabilia. As one of the members of one of The Club's fan groups, Fan Group 1, mentioned: "Before the farewell game, the very last soccer match in the Old Stadium before it's demolition, The Club and the Club Country National Airlines put the names of the fans who bought combined tickets, and named our holy road as "Road to Sacrifice" which we always walk to the stadium before the games by chanting." (Fan Group 1) "Although there is no stadium, The Club is the champion. For example, when we went to City 3, the fans filled it up like their own stadium. We went to City 2 as well as City 4, to play home games. So, all the stadiums always filled the supporters of The Club. I mean, that is a historical achievement. The love of fans, the love of The Club and the belief in The Club, everyone has put the good of the team ahead of their own interests… (Media) *Help at points of interdependency so the project can advance (contractors and their employees)* "Our team worked with dedication until 3 or 4 in the morning, no-one behaved selfishly. They were determining their own work schedule, I am tired today, he will sleep today, and so on..… All companies acted that way. Companies whose shift ended at 5:00 worked until 3–4 in the morning." (Sub-Contractor A) "Necessary previous works must have been completed before we can begin our work. If something remains not done, we would have a problem. So, we provided equipment, worker support. Firstly, other construction teams had to complete infrastructure, cabling, installations, etc. everything, then we would apply the stone pavement finally. However, things did not go like that, of course. We provided machinery and equipment help at times and workers at other times […] we solved all these unexpected things by working two hours extra every day without complaint. If it was necessary, we could stay all night long too." (The City Metropolitan Municipality) "As a matter of fact, every mega project is subject to accidents. We responded to the accidents fast, we stayed there for 3 nights until morning. We saved items before others collapsed. We restored them and solved it. The reason is twofold: first the necessity to work fast to not cause further delays, and second, the necessity to prevent further accidents." (Sub-Contractor B) "Work safety precautions were increased. After the accident, we already had a work safety specialist, external inspectors came to inspect and brief the whole construction site about some extra precautions. All companies just provided additional personnel and promised to complete all missing extra safety precautions. The project was suspended until we completed all missing safety precautions. In order to achieve it as soon as possible, the core staff of the stadium, which was around 21 people and 8–10 people from a couple of other companies, a total of 30–40 people, were assigned to complete all missing items for the whole stadium. The inspectors came to re-inspect and saw that everything was complete. We solved it in 7 days, then the stadium construction resumed […] If we would have had to act alone in that event, it would not have been solved efficiently and in such a short time. 10 of these people were staff of my own company, and the main contractor had their own staff of 8–9 people, and a team of 10 people from several other subcontractors came. That's how we completed the work. Plus, we did not do this work for any financial gain. We provided these 21 persons and so we should receive a payment for it from The Club. And others did not expect financial gain too." (Sub-Contractor A) "Besides major events, minor events impacted the project as well… If I cannot first finish the mechanical or electrical system, the other team cannot do the next step. There are works connected to each other. When a work causes a delay, it chain-affects others. Such things happened, everyone worked day and night. Again, voluntarily by sacrificing themselves." (Mechanical Project Controller) *Donating professional talent and skills* ''As a The Club fan for 40 years, I wrote the most beautiful song I could write (famous songwriter who wrote royalty-free song for The Club). I wish this to be the most loved one of all my songs. I would like to take this opportunity to thank everyone who supported the project.'' (Disguised national newspaper article (Year 0) about the release of the royalty-free album to benefit The Club by a famous singer who was a The Club fan) "The project was 100% fan initiated. The idea came from Fan 1, the t-shirt had been designed by Fan 2, and the project had been presented to the Board of Directors by a user of online fan forum. (Disguised national newspaper article (Year 0) about early The Club soccer player who was also The Club's first captain and manager.) "Our friends, the supporters, created and initiated this campaign for The Club … to promote, or rather, boost togetherness within The Club family. The Club is a very big family with millions of members all around the world. … He first shared his idea to consult other fans on Fans' Forums –Fan Forum 1 and Fan Forum 2— and received positive reactions on the social platforms." (Fan Group 1)
Temporary identity change	Adjusting Goals "The star players were gone, we had a great squad in Year 1 - Year 0. But those were sold… The Club had to prioritize the financial recovery first to be able to build a New Stadium. A more modern and bigger stadium was also the dream of many The Club supporters. Notwithstanding, in Year 0 - Year 1 so we lost the championship, we had sold all the good players. Year 1 - Year 2 was the worst, I think. But again, we supported The Club, because having good players doesn't guarantee a championship, and they were building the stadium. Yet again, we had an insufficient squad to compete with our competitors for two seasons." (Fan Group 1) "The most important thing was to make a fan's dream, having a modern and bigger stadium, come true. We {The Club} had to focus more on the New Stadium for 2 years, however, in my opinion it is done to win more and more championships in the future. Consequently, two seasons following the completion of the stadium, The Club won the The Club Country Super League championship twice. Of course, during construction, The Club management acted very carefully spending a penny. It temporarily changed its transfer policy, cut down on expensive player transfers, to better finance the stadium construction for a season or two." (The Club's Council Board Member) "Construction of this stadium reminds me an old joke. There is an old joke in business: "good, fast, and cheap. Pick any two." Considering the situation The Club was in, it is like 'the reality is that The Club does not have enough money, wants to build an amazing stadium, and spend money to transfer a player as high as the competitors to be the champion'. Choose only two!" (Consultant Project Manager) "The Club followed a lowering the cost policy, includes parting company with high salary star players, such as Soccer Player 1, Soccer Player 6, and Soccer Player 7, and deciding to continue with modest-cost players." (Disguised academic publication (Year 4) focused on financial sustainability in soccer with The Club as case study) *Adjusting values and principles* "Of course, accepting donations was contrary to The Club's values, asking money from others or accepting donations is a bit of an unpleasant thing. The Club family is big enough to overcome all difficulties. I use a family metaphor, if you want to build a new house for your family, you will want to do it with your own money. As a father, you will not ask money from your kids. But, if your kids know the father is building a new house for them, and yet the father is having difficulties…the kids will find a way to help their father… Because it is your family, and because it is going to be your house… At this point, I think it is the kids' duty to offer help; but not just to offer, also make it happen. So, the *Sacrifice* campaign initiated by The Club supporters…" (The Club USA-Supporter Association) "Money was the biggest handicap to build this stadium. But even at that time, The Club did not want to damage its image by collecting donations. The Club has always been a strong and self-sufficient club. When other clubs collected donations for one reason or another, they were always criticized by The Club family. However, the important difference is that The Club did not open stands in the center of the city or in shopping malls etc., and begged for money from its fans. They just decided to accept if someone wants to donate. Because the circumstances demanded it. The Club just could not resist the pressures stemming from the desire of the fans, and the rich businessmen who had given their heart to the soccer team, to get their "home (New Stadium)" as soon as possible." (Consultant Project Manager)
Critical Transition Mechanisms	
Power in Numbers	*Collective action* "Our unity and strength were further reinforced by last month's *Sacrifice* project, which our legendary player Past Soccer Player 1 first inspired. I am very pleased to say that we have already sold tens of thousands of T-shirts since the start of the *Sacrifice* campaign. These examples of Club and fan

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Themes	Representative Quotations
	collaboration demonstrate that we will overcome our financial difficulties sooner than anyone expects". (Disguised regional online press release (Year 0) focused on the benefit concert for The Club). The *Sacrifice* campaign proved widely successful, with customers purchasing 165,000 goods during the first four months of the campaign, injecting The Club with a net worth of 2.5 million CCC. (Disguised national newspaper article (Year 0) about the financial situation of The Club) "CMM sent a team of 600 people to do the landscaping. They worked day and night too, and they worked hard and unselfishly!" (Mechanical Project Controller) "The financial problems of The Club at that time, and other events you know, created such an impression on the minds that project might not be completed on time…The project might be delayed 3 more months, if we did not increase our team size […] At first, we went in groups of 20–30 workers…Towards the end, when the deadline put a pressure on us, littering became a problem during landscaping. To clean it immediately, and to solve the problems there, 300 hundred workers came from the road maintenance repair unit in one night. This was the biggest help of The City Metropolitan Municipality, a team of 400–500 workers completed the landscaping and missing stones were completed. For example, we were working in a group of four-five hundred last two-three weeks. Other teams cheered and applauded when we, 400–500 workers, entered the site in the morning. This created an excitement that passed on all the workers there. We provided every sort of help and support. At times, we provided machinery, equipment, and workers at other times. And we absolutely did it voluntarily." (The City Metropolitan Municipality) *Copying* "Some of the players said: "OK I want to change my contract, pay me same amount in CCC…. they voluntarily offered to accept a salary reduction… Afterwards, The Club offered it to the other players, and almost all players accepted. The Club's proposed cuts … Some players had not received their wages for months, they said "it's ok, pay me later. It was unbelievable… The players, "The Club's soccer team players", for the first in the soccer history I think, voluntarily reduced their annual salary by about 40 percent…." (The Club's Council Board Member) *Splitting* "The Club performed sentient acts. To prevent Seagulls from hitting it, the transparent planned building element was being changed to opaque. We also discussed this issue in our print media and online newspaper, and also mentioned it in broadcast news shows." (Media) "Our sponsors were broadcasting live the construction works of the stadium. Some fans were watching 24 h a day from the website. Also, we broadcasted news on the smart boards on our own official TV channel, The Club TV. Later, it made a great impression in the written and visual media throughout the country." (Club Vice President)
Boosting	*Vertical boosting* "Interaction wise, many people were sharing their concerns or complaints with us or The Club by sending emails, calling call centers and using social media, etc." (Sponsor) *Horizontal boosting* Club Country who lives in Other Country. He first shared his idea to consult other fans "The founding father of the "*Sacrifice*" campaign is an expat friend from on Fans' Forums -Fan Forum 1 and Fan Forum 2-, and received positive reactions on the social platforms, and reached another friend of us to design t-shirts with this idea." (Fan Group 1) "After receiving positive feedback on online fan forums, Fan 1 shared his idea with a graphic designer who is also a supporter of The Club. Together they brainstormed about what the theme should be. They ultimately decided on "*Sacrifice*," inspired by The Club's first captain and manager. (Disguised national newspaper article (Year 0) about early The Club soccer player who was also The Club's first captain and manager)
Mindset Shift	*Increase Awareness & Visibility through Wittiness* "We prioritized changing that mindset after the occurrence of the injuries. We contemplated three days with other construction parties{contractors}. Eventually, with the help of the main sponsor and The Club management, we {contractors} came up with an innovative solution, we called it "smart signboards". (Consultant Project Manager) "I have worked on many construction sites with construction signboards located everywhere, but no worker pays attention to those sign boards. Perhaps, when the time passes those signboards became invisible in the eyes of workers." (Sub-Contractor C) The new versions of the warning signs, which employees and workers normally do not pay much attention to, started to attract attention. Those also got a lot of attention from The Club's fans, because there were not only warnings, but there was also the history of The Club and the history of Club Country written on the warning signs. Some warning signs are emotional, some are goosebumps, some are fun and uplifting." (Club Vice President)

References

Aaltonen, K. (2011). Project stakeholder analysis as an environmental interpretation process. *International Journal of Project Management, 29*, 165–183. https://doi.org/10.1016/j.ijproman.2010.02.001

Aaltonen, K., & Kujala, J. (2010). A project lifecycle perspective on stakeholder influence strategies in global projects. *Scandinavian Journal of Management, 26*, 381–397. https://doi.org/10.1016/j.scaman.2010.09.001

Aaltonen, K., & Kujala, J. (2016). Towards an improved understanding of project stakeholder landscapes. *International Journal of Project Management, 34*, 1537–1552.

Aaltonen, K., Kujala, J., & Lehtonen, P. (2010). A stakeholder network perspective on unexpected events and their management in international projects. *International Journal of Managing Projects in Business, 3*, 564–588.

Abatecola, G. (2014). Untangling self-reinforcing processes in managerial decision making. Co-evolving heuristics?. *Management decision*. https://doi.org/10.1108/MD-10-2013-0543

Alaghbari, W. E., Kadir, M. R. A., & Salim, A. (2007). The significant factors causing delay of building construction projects in Malaysia. *Engineering construction and architectural management*.

Aldrich, D. P. (2012). *Building resilience: Social capital in post-disaster recovery*. University of Chicago Press.

Aronson, Z. H., Lechler, T., Reilly, R. R., & Shenhar, A. J. (2001). Project spirit-a strategic concept, in: PICMET '01. In *Portland International Conference on Management of Engineering and Technology. Proceedings Vol. 1: Book of Summaries (IEEE Cat. No.01CH37199)* (pp. 539–544). PICMET - Portland State Univ. https://doi.org/10.1109/PICMET.2001.952229.

Bakker, R. M. (2010). Taking Stock of Temporary Organizational Forms: A Systematic Review and Research Agenda. *International Journal of Management Reviews, 12*, 466–486. https://doi.org/10.1111/j.1468-2370.2010.00281.x

Beringer, C., Jonas, D., & Kock, A. (2013). Behavior of internal stakeholders in project portfolio management and its impact on success. *International Journal of Project Management, 31*, 830–846.

Bingham, C. B., & Eisenhardt, K. M. (2011). Rational heuristics: The 'simple rules' that strategists learn from process experience. *Strategic Management Journal, 32*, 1437–1464. https://doi.org/10.1002/smj.965

Bissonette, M. M. (2016). *Project risk management: A practical implementation approach*. Project Management Institute.

Boateng, P., Chen, Z., & Ogunlana, S. O. (2015). An analytical network process model for risks prioritisation in megaprojects. *International Journal of Project Management, 33* (8), 1795–1811.

Bommer, W. H., Dierdorff, E. C., & Rubin, R. S. (2007). Does prevalence mitigate relevance? The moderating effect of group-level OCB on employee performance. *Academy of Management Journal, 50*, 1481–1494. https://doi.org/10.5465/amj.2007.28226149

Borg, N., Naderpajouh, N., Scott-Young, C. M., & Borg, J. (2022). An interdisciplinary and multi-level review of resilience to inform training of human resources for critical infrastructure. *International Journal of Disaster Risk Reduction, 78*, Article 103113. https://doi.org/10.1016/j.ijdrr.2022.103113

Bostick, T. P., Holzer, T. H., & Sarkani, S. (2017). Enabling stakeholder involvement in coastal disaster resilience planning. *Risk Analysis, 37*, 1181–1200. https://doi.org/10.1111/risa.12737

Brass, D. J. (1984). Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly, 29*, 518. https://doi.org/10.2307/2392937

Braun, T., Ferreira, A. I., & Sydow, J. (2013). Citizenship behavior and effectiveness in temporary organizations. *International Journal of Project Management, 31*, 862–876. https://doi.org/10.1016/J.IJPROMAN.2012.09.003

Braun, T., Miller-Seitz, G., & Sydow, J. (2012). Project citizenship behavior? – An explorative analysis at the project-network-nexus. *Scandinavian Journal of Management, 28*, 271–284.

Brueller, D., Brueller, N. N., Brueller, R., & Carmeli, A. (2019). Interorganisational relationships in times of decline: Implications for organisational resilience. *Applied Psychology*. https://doi.org/10.1111/apps.12185

Chen, X.-P., Lam, S. S. K., Naumann, S. E., & Schaubroeck, J. (2005). Group citizenship behaviour conceptualization and preliminary tests of its antecedents and consequences. *Management and Organization Review, 1*, 273–300. https://doi.org/10.1111/j.1740-8784.2005.00012.x

Chow, V., & Leiringer, R. (2020). The Practice of public engagement on projects: From managing external stakeholders to facilitating active contributors. *Project Management Journal, 51*, 24–37. https://doi.org/10.1177/8756972819878346

Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review, 20*, 92–117. https://doi.org/10.5465/amr.1995.9503271994

Clegg, S. R., Sankaran, S., Biesenthal, C., & Pollack, J. (2017). Power and sensemaking in megaprojects. *The Oxford Handbook of Megaproject Management*, 238–258.

Cleland, D. (1986). Project stakeholder management. *Project Management Journal, 17*, 36–44.

Cleland, D. (1998). Stakeholder Management. In J. Pinto (Ed.), *Project management handbook* (pp. 55–72). San Francisco: Jossey-Bass.

Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). SAGE Publications, Inc.

Crosby, P. (2012). Building resilience in large high-technology projects. *International Journal of Information Technology Project Management, 3*, 21–40. https://doi.org/10.4018/jitpm.2012100102

Derakhshan, R., Turner, R., & Mancini, M. (2019). Project governance and stakeholders: A literature review. *International Journal of Project Management, 37*, 98–116. https://doi.org/10.1016/j.ijproman.2018.10.007

Di Maddaloni, F., & Davis, K. (2017). The influence of local community stakeholders in megaprojects: Rethinking their inclusiveness to improve project performance. *International Journal of Project Management, 35*, 1537–1556. https://doi.org/10.1016/j.ijproman.2017.08.011

Di Maddaloni, F., & Davis, K. (2018). Project manager's perception of the local communities' stakeholder in megaprojects. An empirical investigation in the UK. *International Journal of Project Management, 36*, 542–565. https://doi.org/10.1016/j.ijproman.2017.11.003

Duchek, S. (2019). Organizational resilience: A capability-based conceptualization. *Business Research*. https://doi.org/10.1007/s40685-019-0085-7

Dyer, R. (2017). Cultural sense-making integration into risk mitigation strategies towards megaproject success. *International Journal of Project Management, 35*, 1338–1349.

Edmondson, A. C., & McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review, 32*, 1246–1264.

Ehrhart, M. G., Bliese, P. D., & Thomas, J. L. (2006). Unit-Level OCB and unit effectiveness: Examining the incremental effect of helping behavior. *Human Performance, 19*, 159–173. https://doi.org/10.1207/s15327043hup1902_4

Eskerod, P., Huemann, M., & Ringhofer, C. (2015). Stakeholder inclusiveness: Enriching project management with general stakeholder theory1. *Project Management Journal, 46*, 42–53.

Eskerod, P., & Jepsen, A. (2013). *Project stakeholder management*. Aldershot, England: Gower Publishing, Ltd.

Eweje, J., Turner, R., & Müller, R. (2012). Maximizing strategic value from megaprojects: The influence of information-feed on decision-making by the project manager. *International Journal of Project Management, 30*, 639–651.

Ferreira, A. I., Braun, T., & Sydow, J. (2013). Citizenship behavior in project-based organizing: Comparing German and Portuguese project managers. *The International Journal of Human Resource Management, 24*, 3772–3793. https://doi.org/10.1080/09585192.2013.777937

Flyvbjerg, B. (2017). Introduction: The iron law of megaproject management. In B. Flyvbjerg (Ed.), *The handbook of megaproject management, Oxford* (pp. 1–20). Oxford: Oxford University Press.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman Publishing.

Geambasu, G. (2011). *Expect the unexpected: An exploratory study on the conditions and factors driving the resilience of infrastructure projects. PhD*. Switzerland, Lausanne: École Polytechnique Fédérale de Lausanne.

Gelb, D. S., & Strawser, J. A. (2001). Corporate social responsibility and financial disclosures: An alternative explanation for increased disclosure. *Journal of Business Ethics, 33*, 1–13. https://doi.org/10.1023/A:1011941212444

Geraldi, J., Lee-Kelley, L., & Kutsch, E. (2010). The Titanic sunk, so what? Project manager response to unexpected events. *International Journal of Project Management, 28*(6), 547–558.

Gil, N., & Fu, Y. (2022). Megaproject performance, value creation, and value distribution: An organizational governance perspective. *Academy of Management Discoveries, 8*, 224–251. https://doi.org/10.5465/amd.2020.0029

Gilly, J.-P., Kechidi, M., & Talbot, D. (2014). Resilience of organisations and territories: The role of pivot firms. *European Management Journal, 32*, 596–602. https://doi.org/10.1016/j.emj.2013.09.004

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods, 16*, 15–31. https://doi.org/10.1177/1094428112452151

Gioia, D. A., Price, K. N., Hamilton, A. L., & Thomas, J. B. (2010). Forging an identity: An insider-outsider study of processes involved in the formation of organizational identity. *Administrative Science Quarterly, 55*, 1–46.

Glaser, B.G., .& Holton, J. (2004). Remodeling grounded theory, Forum qualitative sozialforschung/forum: Qualitative social research.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.

Gondia, A., Ezzeldin, M., & El-Dakhakhni, W. (2022). Dynamic networks for resilience-driven management of infrastructure projects. *Automation in Construction, 136*, Article 104149. https://doi.org/10.1016/j.autcon.2022.104149

Guo, S., Wang, X., Fu, L., & Liu, Y. (2019). How individual's proactive behavior helps construction sustainability: Exploring the effects of project citizenship behavior on project performance. *Sustainability, 11*, 6922. https://doi.org/10.3390/su11246922

He, Q., Yang, D., Li, Y., & Luo, L. (2015). Research on multidimensional connotations of megaproject construction organization citizenship behavior. *Frontiers of Engineering Management, 2*, 148. https://doi.org/10.15302/J-FEM-2015024

Herbane, B. (2018). Rethinking organizational resilience and strategic renewal in SMEs. *Entrepreneurship & Regional Development*, 1–20. https://doi.org/10.1080/08985626.2018.1541594

Hillmann, J. (2020). Disciplines of organizational resilience: Contributions, critiques, and future research avenues. *Review of Managerial Science*. https://doi.org/10.1007/s11846-020-00384-2

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics, 4*, 1–23.

Hollnagel, E., Nemeth, C. P., & Dekker, S. (2008). *Resilience engineering perspectives: Preparation and restoration*. Ltd: Ashgate Publishing.

Hollnagel, E., Woods, D. D., & Leveson, N. (2006). *Resilience engineering : Concepts and precepts*. Ashgate Publishing Ltd.

Huberman, A.M., .& Miles, M.B. (.1994). Data management and analysis methods.

Hu, Y., Chan, A. P., Le, Y., & Jin, R. Z. (2015). From construction megaproject management to complex project management: Bibliographic analysis. *Journal of Management in Engineering, 31*(4), Article 04014052.

Huxham, C., & MacDonald, D. (1992). Introducing collaborative advantage: Achieving inter-organizational effectiveness through meta-strategy. *Management Decision, 30*, 50–56.

Jacobsson, M., & Hällgren, M. (2016). Impromptu teams in a temporary organization: On their nature and role. *International Journal of Project Management, 34*, 584–596. https://doi.org/10.1016/j.ijproman.2016.02.001

Jones, T. M., & Wicks, A. C. (1999). Letter to AMR regarding "Convergent stakeholder theory.". *Academy of Management Review, 24*, 621–623. https://doi.org/10.5465/amr.1999.12600876

Klein, P. G., Mahoney, J. T., McGahan, A. M., & Pitelis, C. N. (2019). Organizational governance adaptation: Who is in, who is out, and who gets what. *Academy of Management Review, 44*, 6–27. https://doi.org/10.5465/amr.2014.0459

Klosterman, R. E. (1980). A public interest criterion. *Journal of the American Planning Association, 46*, 323–333.

Lehtinen, J., & Aaltonen, K. (2020). Organizing external stakeholder engagement in inter-organizational projects: Opening the black box. *International Journal of Project Management, 38*, 85–98. https://doi.org/10.1016/j.ijproman.2019.12.001

Li, X. H., & Liang, X. (2015). A Confucian social model of political appointments among Chinese private-firm entrepreneurs. *Academy of Management Journal, 58*, 592–617.

Li, Y., Lu, Y., Cui, Q., & Han, Y. (2019). Organizational behavior in megaprojects: Integrative review and directions for future research. *Journal of Management in Engineering, 35*(4), Article 04019009.

Liljenstrom, H., & Svedin, U. (2005). *Micro meso macro: Addressing complex systems couplings*. Singapore: World Scientific.

Lim, B. T. H., & Loosemore, M. (2017). The effect of inter-organizational justice perceptions on organizational citizenship behaviors in construction projects. *International Journal of Project Management, 35*, 95–106. https://doi.org/10.1016/J.IJPROMAN.2016.10.016

Luo, H., Liu, J., Li, C., Chen, K., & Zhang, M. (2020). Ultra-rapid delivery of specialty field hospitals to combat COVID-19: Lessons learned from the Leishenshan Hospital project in Wuhan. *Automation in Construction, 119*, Article 103345. https://doi.org/10.1016/j.autcon.2020.103345

McElroy, B., & Mills, C. (2000). Managing stakeholders. *Gower handbook of project management* (pp. 757–775).

McGahan, A. M. (2021). Integrating insights from the resource-based view of the firm into the new stakeholder theory. *Journal of management, 47*, 1734–1756. https://doi.org/10.1177/0149206320987282

Meng, X. (2012). The effect of relationship management on project performance in construction. *International Journal of Project Management, 30*, 188–198.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2nd ed.). Thousand Oaks, CA: Sage.

Mok, K. Y., Shen, G. Q., & Yang, J. (2015). Stakeholder management studies in mega construction projects: A review and future directions. *International Journal of Project Management, 33*, 446–457.

Morkan, B., Holahan, P. J., & Thomas, L. M. (2017). The intersection of collaboration theory and unexpected event management: towards a process model of project stakeholders' collaboration. *International Journal of Innovation, Management and Technology, 8*(6), 452–459.

Munet-Vilaró, F. (1988). Technical notes. *Western Journal of Nursing Research, 10*, 112–116. https://doi.org/10.1177/019394598801000113

Nachbagauer, A. G. M., & Schirl-Boeck, I. (2019). Managing the unexpected in megaprojects: Riding the waves of resilience. *International Journal of Managing Projects in Business, 12*, 694–715. https://doi.org/10.1108/IJMPB-08-2018-0169

Naderpajouh, N., Matinheikki, J., Keeys, L. A., Aldrich, D. P., & Linkov, I. (2020). Resilience and projects: An interdisciplinary crossroad. *Project Leadership and Society, 1*, Article 100001. https://doi.org/10.1016/J.PLAS.2020.100001

Novak, D. C., Wu, Z., & Dooley, K. J. (2021). Whose resilience matters? Addressing issues of scale in supply chain resilience. *Journal of Business Logistics jbl, 12270*. https://doi.org/10.1111/jbl.12270

Olander, S. (2007). Stakeholder impact analysis in construction project management. *Construction Management and Economics, 25*, 277–287.

Olander, S., & Landin, A. (2005). Evaluation of stakeholder influence in the implementation of construction projects. *International Journal of Project Management, 23*, 321–328.
Oppong, G. D., Chan, A. P., & Dansoh, A. (2017). A review of stakeholder management performance attributes in construction projects. *International Journal of Project Management, 35*, 1037–1051.
Organ, D. (1988). Organizational citizenship behavior: The good soldier syndrome.
Patton, M. Q. (2002). Two decades of developments in qualitative inquiry. *Qualitative Social Work, 1*, 261–283. https://doi.org/10.1177/1473325002001003636
Piperca, S., & Floricel, S. (2012). A typology of unexpected events in complex projects. *International Journal of Managing Projects in Business, 5*(2), 248–265.
Podsakoff, P. M., MacKenzie, S. B., Paine, J. B., & Bachrach, D. G. (2000). Organizational citizenship behaviors: A critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management, 26*, 513–563.
Provan, K., Sydow, J., & Podsakoff, N. (2018). Network Citizenship Behavior: Toward a Behavioral Perspective on Multi-Organizational Networks.
Rahi, K., Bourgault, M., & Robert, B. (2019). Benchmarking project resilience. *Journal of Modern Project Management, 7*, 6–21. https://doi.org/10.19255/JMPM01901
Ringen, K., Seegal, J., & England, A. (1995). Safety and health in the construction industry. *Annual Review of Public Health, 16*, 165–188.
Rutten, B. P. F., Hammels, C., Geschwind, N., Menne-Lothmann, C., Pishva, E., Schruers, K., et al. (2013). Resilience in mental health: Linking psychological and neurobiological perspectives. *Acta Psychiatrica Scandinavica, 128*, 3–20. https://doi.org/10.1111/acps.12095
Scheepers, H., McLoughlin, S., & Wijesinghe, R. (2022). Aligning stakeholders perceptions of project performance: The contribution of Business Realisation Management. *International Journal of Project Management*. https://doi.org/10.1016/j.ijproman.2022.03.002
Shafi, M. Q., Iqbal, R., Shahzad, K., & Unterhitzenberger, C. (2021). The mediating role of project citizenship behavior in the relationship between organizational justice dimensions and project success. *Project Management Journal, 52*, 547–562. https://doi.org/10.1177/87569728211026423
Sheth, A., & Kusiak, A. (2022). Resiliency of Smart Manufacturing Enterprises via Information Integration. *Journal of Industrial Information Integration, 100370*. https://doi.org/10.1016/j.jii.2022.100370
Sheth, A., & Sinfield, J. V. (2019). Simulating self-organization during strategic change: Implications for organizational design. In *ACM SIGCHI - Collective Intelligenc* (pp. 1–4). Pittsburgh: ArXiV.
Sheth, A., & Sinfield, J. V. (2022). An analytical framework to compare innovation strategies and identify simple rules. *Technovation, 115*, Article 102534. https://doi.org/10.1016/j.technovation.2022.102534
Signori, S. (2017). From "Managing for Stakeholders" to "Managing with Stakeholders": When Stakeholders Can Help Rescue a Company. pp. 167–192. https://doi.org/10.1007/978-3-319-62785-4_8.
Sheth, A., & Sinfield, J. V. (2023). Risk intelligence and the resilient company. *MIT Sloan Management Review, 64*(4).
Sheth, A. B. (2021). *Pathways to enterprise resilience*. Purdue University. https://doi.org/10.25394/PGS.15062880.v1.
Sinfield, J. V., Sheth, A., & Kotian, R. R. (2020). Framing the intractable – Comprehensive success factor analysis for grand challenges. *Sustainable Futures, 2*, Article 100037. https://doi.org/10.1016/j.sftr.2020.100037
Söderholm, A. (2008). Project management of unexpected events. *International Journal of Project Management, 26*, 80–86. https://doi.org/10.1016/j.ijproman.2007.08.016
Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
Sutterfield, J. S., Friday-Stroud, S. S., & Shivers-Blackwell, S. L. (2006). A case study of project and stakeholder management failures: Lessons learned. *Project Management Journal, 37*, 26–35.
Taleb, N.N. (.2007). The black swan: The impact of the highly improbable. Random house.
Thomé, A. M. T., Scavarda, L. F., Scavarda, A., Thomé, F. E. S., & de, S. (2016). Similarities and contrasts of complexity, uncertainty, risks, and resilience in supply chains and temporary multi-organization projects. *International Journal of Project Management, 34*, 1328–1346. https://doi.org/10.1016/j.ijproman.2015.10.012
Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal, 21*, 1147–1161. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1147::AID-SMJ128>3.0.CO;2-R
Vogus, T. J., & Sutcliffe, K. M. (2007). Organizational resilience: Towards a theory and research agenda, in: Systems, man and cybernetics, 2007. In *IEEE International Conference On* (pp. 3418–3422). ISIC.
Walker, D. (2015). Managing the urgent and unexpected: Twelve project cases and a commentary. *International Journal of Managing Projects in Business, 8*, 612–616. https://doi.org/10.1108/IJMPB-03-2015-0029
Walker, D., & Lloyd-Walker, B. (2016). Rethinking project management. *International Journal of Managing Projects in Business, 9*, 716–743. https://doi.org/10.1108/IJMPB-12-2015-0121
Wang, A. (2019). A framework for assessing project vulnerability to crises. *International Journal of Managing Projects in Business, 12*, 1079–1096. https://doi.org/10.1108/IJMPB-06-2018-0116
Wang, L., Müller, R., Zhu, F., & Yang, X. (2021a). Collective mindfulness: The key to organizational resilience in megaprojects. *Project Management Journal, 52*, 592–606. https://doi.org/10.1177/87569728211044908
Wang, T., He, Q., Lu, Y., & Yang, D. (2018). How does organizational citizenship behavior (OCB) affect the performance of megaprojects? Insights from a system dynamic simulation. *Sustainability (Switzerland), 10*. https://doi.org/10.3390/su10061708
Wang, W., Fu, Y., Gao, J., Shang, K., Gao, S., Xing, J., et al. (2021b). How the COVID-19 outbreak affected organizational citizenship behavior in emergency construction megaprojects: Case study from two emergency hospital projects in Wuhan, China. *Journal of Management in Engineering, 37*. https://doi.org/10.1061/(asce)me.1943-5479.0000922
Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected*. San Francisco: Jossey-Bass.
Wieland, A., & Durach, C. F. (2021). Two perspectives on supply chain resilience. *Journal of Business Logistics jbl.12271*. https://doi.org/10.1111/jbl.12271
Williams, T.A., Gruber, D.A., .& Sutcliffe, K.M. (.2017). Organizational response to adversity: Fusing Crisis Management and Resilience Research Streams Article in The Academy of Management Annals. *journals.aom.org* 11, 733–769. https://doi.org/10.5465/annals.2015.0134.
Wu, G., Liu, C., Zhao, X., & Zuo, J. (2017). Investigating the relationship between communication-conflict interaction and project success among construction project teams. *International Journal of Project Management, 35*, 1466–1482.
Xia, N., Ding, S., & Yuan, J. (2022). The impact of a challenging work environment: Do job stressors benefit citizenship behavior of project managers? *International Journal of Project Management, 40*, 205–217. https://doi.org/10.1016/j.ijproman.2022.01.007
Xia, N., Zhong, R., Wang, X., & Tiong, R. (2018). Cross-domain negative effect of work-family conflict on project citizenship behavior: Study on Chinese project managers. *International Journal of Project Management, 36*, 512–524. https://doi.org/10.1016/j.ijproman.2017.11.005
Xing, X., & Chalip, L. (2009). Marching in the glory: Experiences and meanings when working for a sport mega-event. *Journal of Sport Management, 23*, 210–237.
Yang, D., He, Q., Cui, Q., Asce, A. M., & Hsu, S.-C. (2018). Organizational citizenship behavior in construction megaprojects. *Journal of Management in Engineering, 34*, Article 04018017. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000614
Yang, D., He, Q., Cui, Q., & Hsu, S. C. (2020). Non-economic motivations for organizational citizenship behavior in construction megaprojects. *International Journal of Project Management, 38*, 64–74. https://doi.org/10.1016/J.IJPROMAN.2019.09.006
Yang, D., Zhu, J., Cui, Q., He, Q., & Zheng, X. (2021). The diffusion mechanism of megaproject citizenship behavior: The role of institutional isomorphism. *Sustainability (Switzerland), 13*. https://doi.org/10.3390/su13158123
Yang, X., Wang, L., Zhu, F., & Müller, R. (2022). Prior and governed stakeholder relationships: The key to resilience of inter-organizational projects. *International Journal of Project Management, 40*, 64–75. https://doi.org/10.1016/j.ijproman.2021.10.001
Yin, R. K. (2018). *Case study research and applications* (6th ed.). SAGE Publications.
Zheng, X., Chen, J., Han, Y., Ren, L., & Shi, Q. (2021). Unveiling complex relational behavior in megaprojects: A qualitative-quantitative network approach. *International Journal of Project Management, 39*, 738–749. https://doi.org/10.1016/j.ijproman.2021.07.001