IMPROVING DISASTER RESPONSE: COMBINING ORGANISATIONAL AND INDIVIDUAL RESILIENCE FOR IMPROVED OUTCOMES

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Disaster recovery requires strong construction organisations and resilient individuals. This paper examines construction organisational and individual resilience in the context of disaster response. The paper focusses on assessing how individuals and construction organisations respond to disasters. Through a case study methodology, assessing disaster response and recovery in New Zealand, the paper highlights major themes that must be considered when combining organisational and individual resilience to improve recovery outcomes. For organisations, that means having, for instance, adaptive plans, strong connections and supply chains, effective leadership, and adequate resources. For individuals, it includes resilience training, a focus on mental health, and developing ways of collaborating and communicating effectively. The main findings are that organisational and individuals can improve their resilience through focussing on resilience building processes and attributes that build resilience. These processes and mechanisms are influenced by the themes found in the current research. Based on different case studies, the paper identifies a broad spectrum of themes which integrates organisational and individual resilience. This will ultimately help in developing a foundation for creating a framework which can allow organisations to withstand and adapt to challenges whilst allowing individuals to enhance their resilience.

Keywords: disaster response; individual resilience; New Zealand; organisational resilience

INTRODUCTION

Amidst the fast-growing world with numerous challenges like globalisation, disasters, geo-political wars, financial crisis, supply-chain disruptions, etc, resilience of organisations has gained importance. The resilience of organisations can impact employment, growth and development within a country. To promote the resilience of organisations, several authors (Kuntz *et al.,* 2017; Lengnick-Hall *et al.,* 2011) began exploring the relationship between organisations and individual resilience. The core idea behind this evaluation was consideration of individuals as the most basic unit of the organisation whose personal characteristics and environment in which they are

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situated can bring a change in the performance of the organisation. In line with this, The National Disaster Resilience Strategy of New Zealand (Ministry of Civil Defence and Emergency Management ((CDEM), 2019) highlighted the significance of better acknowledging and utilising human capital during disaster risk reduction (DRR) practices.

By human capital, CDEM refers to the skills, decision making capabilities and emotional intelligence that can be used while planning for strategies to mitigate or prevent against the impacts of the disaster (Sun *et al.,* 2021). In addition, the emergence of an organisation's resilience is fundamentally supported by how its individual members interact and act within the organisation (Lengnick-Hall *et al.,* 2011). Resilient individuals can help ensure a resilient organisation or can accelerate the process of achieving a resilient organisation. On the other side, fostering resilience in organisations is crucial for empowering individuals to navigate the on-going organisational landscape. Individual and organisational resilience impact each other at different stages of disaster planning and recovery processes. However, while the importance of human capital in responding to organisational change after crises and disasters is well-known, there is little research on how employee resilience impacts organisational resilience. In fact, the existing literature on how individual resilience ties into organisational resilience is largely theoretical and quite sparse. Linnenluecke (2017) remarked that there are limited insights into the connections between individual and organisational levels of analysis, emphasising the importance of exploring how resilience might be expanded or extended. Determining the connections between individual and organisational resilience could help both features to improve, especially if a focus on the key attributes that collectively enhance organisational and individual resilience at the same time can be understood.

Organisations are the heart of the construction sector delivery, made up of individuals with differing skills and expertise. Alongside construction, building, engineering, and other core competencies, more recently a focus on how organisations can be resilient in the face of changes has gained interest because of their ability to perform better during adversity (Boin and Van Eeten, 2013).

In understanding organisational resilience, comprehending the link between individual and organisational resilience becomes an important focus. The exploration presented in this paper helps in determining major key areas to enable construction organisations to withstand financial pressures, supply chain issues, market competition and political challenges by enhancing the potential of the individuals. Scholars have concluded that individuals are the central point of the organisations, and their resilience influences the organisational resilience (Lengnick-Hall *et al.,* 2011). But the presence of resilient individuals may not cause a resilient organisation and vice versa. However, improving some features of resilience of an organisation might improve the resilience of individuals. Therefore, with the help of a case study methodology, the current research aims to identify important features which can help us to understand the relationship between individual resilience and organisational resilience.

RESEARCH METHOD

Saunders *et al. (*2015) proposed eight research techniques which can be bifurcated into qualitative and quantitative research strategies. Qualitative method of research involves the collection and interpretation of non-numeric data, such as text, images, and videos, to provide insights into the subjective experiences and perspectives of the individuals involved. It involves experiment, survey, archive research and case study.

The aim of using qualitative methods is to explore, originate, and evaluate ideas by compiling data, and identifying data trends from theories or hypotheses.

To understand the relationship between individual resilience and organisational resilience, case studies were chosen. The choice of case study allows the examination of complex and emerging phenomena and facilitates the researcher to get a detailed insight on their studies through single or multiple case examples (Creswell, 2014). Thus, the current study is based on the analysis of three organisations which have demonstrated resilience by surviving and adapting in recent challenging scenarios. The organisations implemented innovative resilience practices including a focus on employee satisfaction and well-being.

The first case study is of a construction consultancy organisation (Organisation A) based in New Zealand who were responsible for aspects of disaster recovery during the Cyclone Gabrielle in 2023. Despite being hit by the most unanticipated disaster of New Zealand, the organisation managed through careful planning of their available resources, people and financial reserves to complete their recovery objectives. The organisation adopted creative techniques for risk management and involved multiple stakeholders for resilience planning and response (Sanders, 2023).

The second organisation is another construction consultancy organisation (Organisation B) which is a global organisation. The organisation has survived several crises and has managed various types of disruptions. The organisation is well known for its recovery work during the Kaikōura Earthquake of 2016 and provides lessons of organisational and individual resilience with a focus on learning, adaptation and developing real time information exchange (WSP, 2024).

The last case is of two health care organisations in New Zealand which highlights their response to building resilience during and after Cyclone Gabrielle (Gisborne Herald, 2024; Tauranga Health, 2023). The health care and medical sector are often vulnerable during disasters because of their work at the front line. Although health care and construction organisations face different challenges, the third case study provides an examination of how other sector organisations develop resilience and can help construction organisations better develop future resilience building.

As per (Kahn *et al.,* 2018; Williams *et al.,* 2017), organisational resilience is the organisations capacity to confront and overcome challenges by adapting its operations in tough times. Based on this description of organisational resilience, the chosen organisations show response and survival including a focus on the employee skills and learning development. The research shows how organisations adapted their systems, which led to improvement and increased resilience during and after a crisis.

The study utilised findings from firm's website (Livermore, 2024), newspaper articles (Gisborne Herald, 2024; Tauranga Health, 2023) and relevant literature to understand the relationship between individual resilience and organisational resilience. Data from multiple sources allows a more comprehensive understanding of the organisations and the disaster event, allowing a richer analysis and interpretation. Cross-referencing information from multiple sources enabled validation of findings and a check for consistency and accuracy, reducing the risk of bias or misinterpretation. Crucial details on the functioning of the organisation were gathered from each source to a word document. General themes are presented based on thematic analysis of the document using NVivo software. The process adopted for generating themes involved an analysis of the data to identify recurring terms or keywords. These keywords were then utilised to develop "codes" which are short textual representations, capturing the

intrinsic nature of the data. The codes were grouped together into meaningful categories called "themes". Themes were then analysed including establishing links between organisational and individual resilience themes.

CASE STUDIES

Construction Consultancy (Organisation A)

Cyclone Gabrielle was one of the most significant cyclones in New Zealand in recent years. The impact was narrow but deep in terms of geographical area and the recovery phase has been complicated and is still ongoing. Construction Organisation (A) was actively supporting communities in the aftermath of the cyclone. Following the impact of Cyclone Gabrielle, Organisation (A) contributed to the recovery process and by drawing from their extensive experience working alongside public infrastructure clients, they effectively engaged with impacted communities. This engagement was crucial in evaluating damage, offering engineering solutions, and supporting the recovery process. The themes that emerged from the analysis show impacts on the resilience of the organisations and the resilience of the employees including:

Cross-sector collaboration and communication- The regional head of the organisation highlighted the value of working with different regional teams. This helped them to gain better control of the situation by exchange of resources and manpower. The organisation stated that they found establishing communication a challenge and needed to work on this aspect to avoid such scenarios in future. Though this was a particular situation with Organisation (A) but is a common issue and construction organisations need to establish good communication across stakeholders (Lang, 2023).

Use of technology and resources to maintain business continuity- After the disaster recovery process, organisation (A) noted the standardisation of information as one of the keys to performing better. This centralisation and standardisation of information includes everyone having access to data on existing vulnerabilities and resilience (Livermore, 2024). Data is critical for increasing awareness and developing stronger recovery plans. Organisations need to adopt maintain interoperable technology including software, devices, telecommunications and other contact channels.

Team Spirit- Being a part of Asia-Pacific region, organisation A had employees from diverse fields and variety of nations. Different professional attributes along with awareness of national and international trends, technologies, climatic conditions, learnings help in the development of the team's resilience. When an organisation has people from diverse backgrounds then the organisation should recognise the value of diverse sources and collective efforts to enhance its resilience (Duchek, 2020).

Involvement of external stakeholders- During the early phase of the recovery activities, the leaders of the organisation realised the unique and indispensable role of community, government and other external stakeholders in the recovery process. Communities contribute to local knowledge, social capital, and adaptive capacity, while government provide policy support, resource allocation, and coordination of resilience efforts. Moreover, these stakeholders coordinate emergency management and response efforts related to construction-related emergencies, such as building collapses, infrastructure failures and their cooperation and collaboration with construction teams and agencies facilitate efficient and effective recovery processes, ultimately enhancing the sector's resilience (Sanders, 2023).

Adaptation and Improvisation process- Although the organisation performed well with disaster recovery processes, there remained some challenges, including enhancing quick repair capabilities, improving recovery processes, and ensuring the safety of residents as they support themselves following events (Livermore, 2024).

Resilient leader- Leaders of different organisations including Māori businesses and the regional team combined efforts and deployed the workforce. Moreover, they not only took care of the employee's mental health but also guided and supported them. The crucial role of a resilient leader is to bring a positive change before, during and after the disaster or crisis phase (Lang, 2023).

Construction Consultancy (Organisation B)

Kaikōura, on the eastern coastline of New Zealand witnessed a powerful 7.8 magnitude earthquake in November 2016. The seismic event caused ruptures along multiple fault lines, resulting in severe disruption and, in certain areas, destruction of Kaikōura's road and rail infrastructure. In such situation, construction companies become involved in the recovery and reconstruction of lifelines. Organisation B aided emergency response and regained connectivity to many isolated areas. The course of action taken by Organisation B highlighted major key points that an organisation must utilise to channel the full potential of employee's resilience to aid the organisation's resilience. The themes that emerged from the analysis on consultancy B show some of the crucial steps to help build resilience including:

Real-time data transfer- To maintain a streamlined flow of instructions and information, the engineers conducted building triage assessments and inspected crucial lifeline services to facilitate the rapid restoration of communication networks. Working alongside Civil Defence and Emergency Management, the team coordinated information sharing to prevent redundant inspections. Moreover, adopting a partnership model involving clients, contractors, iwi, and other consultants facilitated the efficient sharing of information and the development of a collective awareness of the situation (WSP, 2024). The organisation encouraged resilience to develop in their employees through learning from experience and becoming involved with collaboration between stakeholders.

Information learning and sharing- Reflecting on their experience during the Canterbury Earthquakes, Organisation B had experience of earthquake emergency response. They used this knowledge to develop protocols specific to such events and were supported by a team of skilled professionals (WSP, 2024). Learning organisations are resilient and pass this learning onto their employees, creating resilience in individuals.

Community Connectedness- Organisation B prioritised and evaluated buildings of six schools to expedite the resumption of normal activities for both the schools and their communities. The team dedicated itself to providing aid and support during the immediate emergency response. The restoration of fundamental services such as roads and railways meant that life could resume. The organisations community connectedness was enhanced during this period, making the organisation stronger and more resilient (WSP, 2024).

Efficient planning and preparedness- One of the reasons attributed to the successful performance of Organisation B while dealing with the disaster was inclusion of highly trained and experienced individuals in the team who knew how to respond and make decisions in challenging circumstances (WSP, 2024). Individuals who had

experienced previous events were able to demonstrate learning and professionalism and had a high level of resilience. They were able to influence organisational processes. For instance, the presence of pre-established contractual frameworks facilitated the swift mobilisation of resources by individuals with in-depth knowledge of the network.

Health Care Organisations

The two healthcare organisations operate as a holistic provider of health facilities and support services dedicated to providing health services to over 3,000 people. These two organisations supported the local community during and after Cyclone Gabrielle and give an example for exploring the relationship between individual resilience and organisational resilience and where infrastructure and buildings become critical for disaster recovery.

Accountability and Ownership- The response of the organisations noted employee's own willingness to work and instead of looking at the leaders, people themselves took responsibility and responded. The impact of individuals affected organisational performance as employees understood the seriousness of situation and believed that the effort of each one of them counted towards a stronger organisation (Emergency rural staff response, 2023).

Self-leadership - Most of the Health staff couldn't get in touch with their senior employees because the roads were blocked, and communication systems were affected. They took the initiative finding ways to manage the situation so that people were safe (Turanga Health, 2023). In this process, whoever was available on site helped, irrespective of team, group or specialisation.

Community Connectedness - There was significant apprehension regarding the potential loss of power and its implications for patients, but the staff worked with the health system to develop back-up systems using their connections in the community (Emergency rural staff response, 2023)

Organisational Culture- Organisations appeared focused and professional, especially in their communications to staff, which had a significant impact on individuals morale and their willingness to act with professionalism, increasing the reputation of the organisations (Turanga Health, 2023).

FINDINGS AND DISCUSSION

The case studies show the emergence of major themes in relation to individual resilience and organisational resilience. Common themes are shown below and are themes which will be further assessed through additional case-studies as the research project develops.

The major themes identified in Figure 1 can be broadly divided into three parts: Organisational, Individual and Individual-Organisational themes. Organisational themes are those which the organisation has control over and are themes such as facilitation of real-time data transfer and cross sector collaboration, awareness of available resources, organisational culture, planning and preparedness and support of external stakeholders. All these factors are from within the organisations.

 Organisations set up systems and provide resources, however they rely on collective knowledge to decide what potential resources are needed and what skills are required to make use of those resources. Such data must be shared by organisations which can ensure that individuals have pre-determined planning coordination and contact with

different agencies, authorities and stakeholders. Organisational culture plays a vital role as it shapes the attitudes, behaviours, and practices within an organisation (Cherian *et al.,* 2021) which encourages transparency, communication, innovation, and collaboration (Martins and Terblanche, 2003). Such practices allow construction organisations to navigate crises, increasing the resilience of the organisations and helps in the execution of disaster recovery and reconstructions works.
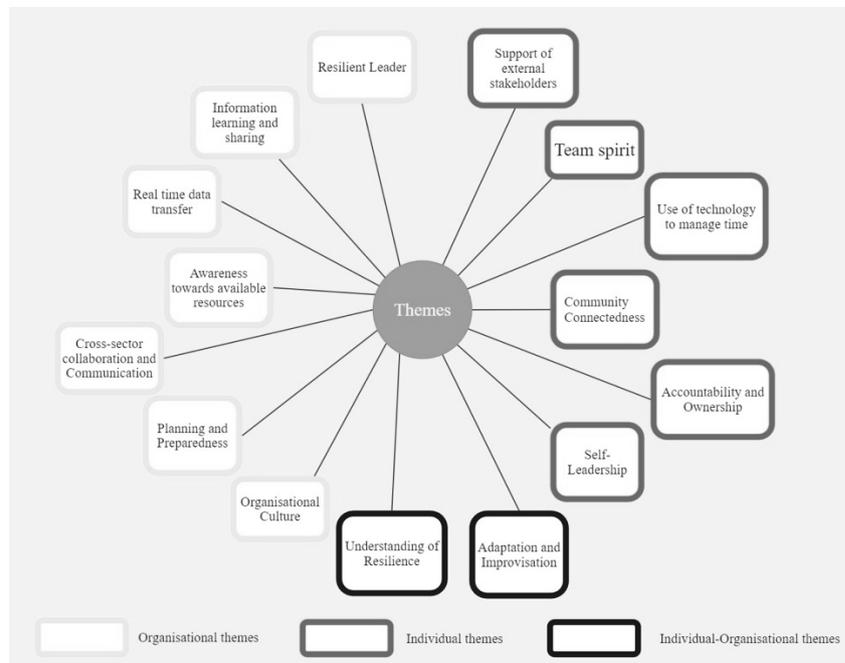

Figure 1: Major themes identified from the case studies

Having resilient leaders or having extensive knowledge of resources and technology can help construction organisations to develop emergency response and recovery plans to manage crises (Beckham *et al.,* 2023). Moreover, the use technology helps with response, including coordinated emergency response efforts in real time.

The individual themes comprised of those themes which are primarily influenced by individual's skills, attitude and behaviour. It includes accountability and ownership, self-leadership, community connectedness, team spirit attitude, proficient use of technology. By cultivating these qualities and skills, individuals can better navigate adversity, bounce back from setbacks, and thrive in the face of challenges. Having the tendency of self-leadership allows individuals to be better equipped to adapt, problem-solve, and take control of their circumstances (Du Plessis, 2019).

Additionally, having a strong support network from community enhances resilience by providing resources, encouragement, and local perspectives during difficult times. This is also supported by team resilience which strengthens individual resilience by providing a sense of solidarity, encouragement, and shared responsibility for overcoming challenges (Kirmayer *et al.,* 2009). In fact, the characteristic of accountability and ownership of individuals ensures that tasks are completed efficiently, and errors are promptly addressed, reducing the likelihood of project delays and cost overruns (El-Wafa and Mosly, 2024). In addition, themes such as community connectedness which facilitates community feedback and input into project planning and decision-making processes, ensuring that projects align with local needs and priorities and minimising the risk of opposition or resistance.

Eventually, in tough times, construction organisations can regulate and focus on obstacles.

The individual-organisational themes have adaptation and improvisation and understanding of resilience which are influenced by both individual resilience and organisational resilience. Adaptation and improvisation are essential components of organisational resilience, which provides space to the individuals to employ innovative problem-solving techniques, handling ambiguity in work scenarios, cultivating a capacity for ongoing learning (Pulakos *et al.,* 2000). Adaptation of individuals refers to individual's ability to manage unpredictable scenarios and to change oneself as and when needed (Park and Park, 2021). This helps the organisations to modify, refine, or evolve its features to lessen potential harm, capitalise on opportunities, or handle the aftermath of disruptive incidents. Similarly, a thorough insight of resilience is necessary at both levels as they mutually impact one another's process to develop and maintain resilience over time.

The findings of (Lengnick-Hall *et al.,* 2011; Liang and Cao, 2021) suggests that individual resilience is the main source of organisational resilience because a system's resilience is based on identifying the key capabilities and capacities of its essential components like human resource to enhance its functioning while dealing with crisis. In contrast, the current study indicates that individual resilience and organisational resilience explicitly influence each other. However, organisational resilience does not always require the presence of resilient individuals, which is evident from the organisational themes.

For instance, organisational leadership may support and encourage resilient individuals to take initiative and be more creative, but often the organisation requires strong strategic measure which is guided by organisational level policies and leadership. In the absence of such senior level managements, even the resilient individuals lose track and focus on their survival. In such scenarios, the organisation demands a strong unifying force which comes under organisational level because of their higher influence, massive infrastructure and experience. Similarly, individual resilience is influenced by its organisation as they spend considerable amount of time there. Despite that, it's not just limited to organisational resilience as it is majorly impacted by personal factors such as optimism, past encounters, friends and family support. Evidently, both individual resilience and organisational may or may not influence one another depending on the context or demand of the situation. This also explains the complex dynamics between individual resilience and organisational resilience and validates the observation of (Mokline and Abdallah, 2021) which highlights that the presence of resilient individuals does not directly lead to resilient organisation.

CONCLUSIONS

The analysis of different organisations provided a broad view of themes which can connect individual resilience (how well individuals bounce back from adversity) and organisational resilience (how well organisations withstand and adapt to challenges). The study is limited in terms of scope, due to the number of case studies or the depth of analysis, so it is crucial to conduct further studies to validate and refine the initial findings. Future research works can incorporate the use of quantitative methods or a mixed method approach to provide a stronger base to the study.

As far as the construction sector is concerned, it is important that organisational and individual resilience are important for success, especially during and after a disaster. Learning resilience, cultural resilience, planning and adaptive resilience associated with individual resilience can then impact organisational resilience. To investigate the impact of the aforementioned resilience levels, surveys and semi-structured interview with construction professionals and academicians can provide detailed insight of this relationship by sharing industry-specific knowledge, relevant trends or behaviours and theoretical perspectives on resilience. This exploratory study could be utilised to create a framework which construction industry practitioners can follow to strengthen their individual and organisational resilience.

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