Organisational recovery from the 4 September 2010 Darfield earthquake: preliminary impacts to organisations in Canterbury

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Resilient organisations mitigate the physical, economic, and social impacts of a crisis by consistently preparing for and adapting to their hazardscape. In this paper are some of the preliminary findings from a planned three part longitudinal study that describes the initial impacts on and responses of organisations following the 4 September 2010 Canterbury (M7.1) earthquake. Organisations sampled include rural organisations proximal to the fault trace, organisations located within the Kaiapoi and Christchurch central business districts (CBDs), and organisations from six different sectors: fast-moving consumer goods (FMCG), trucking, ICT, hospitality, building suppliers and lifelines (critical infrastructure). The perishable data summarised in this report were collected within three to five months after the earthquake. The paper summarises the direct and indirect earthquake-related impacts on organisations during the response and early stage of the recovery process, and the role hazard mitigation has played in organisations' post-disaster experience. Additionally, organisations' perceptions of the challenges and impacts of the earthquake on their ability to operate are discussed. These results highlight the differential impacts to and response of individual organisations, industry sectors, and localities (rural, urban and those located within the CBDs) immediately following the 4 September 2010 Canterbury earthquake.

The results presented here are based on responses from 376 organisations. A large proportion (77%) of organisations sampled had fewer than 20 full-time employees, with a majority (51%) of the total sample employing fewer than five full-time staff. Organisations with greater than 100 full-time employees comprised ten per cent of the sample. The distribution of organisation size in this study is reflective of the size of organisations in New Zealand.

Reasons for disruption and closure differed by sector. Organisations in the CBDs and the hospitality sector were all affected by issues pertinent to their location. Organisations in these sample groups found that "damage to or closure" of nearby and adjacent buildings and inability to access their site as the most disruptive factors. All sectors, especially rural farms, reported the interruption of electricity supply as one of the most disruptive factors to their ability to do business. Cash flow and customer loss were major concerns for organisations across all sectors.

At the time of sampling, the majority (61.5%) of organisations observed no change to their overall revenue. However, of those reporting a change in revenue, the effect was largely negative. Only lifelines and rural farms had more organisations report revenue increases than decreases. The results also pointed to distinct variations in business impact, with 29% of businesses reporting a drop in revenue following the earthquake and 9% reporting an increase. Approximately 9% of survey respondents laid staff off after the earthquake, while 37% took staff on. In total, sampled organisations affected by the 4 September earthquake made 13 full time, 17 part-time, and 4 temporary employees redundant in the aftermath of the earthquake, while 103 full-time employees, 146 part-time, and 73 temporary employees were hired. Many organisations that reported redundancies identified the reasons for the decisions were not due to the earthquake.

Organisations were asked to identify the biggest challenges they faced after the earthquake. A large majority or organisations, regardless of sector, reported staff wellbeing as the biggest challenge in the aftermath of the earthquake.

Table 1: Summary of each sectors biggest challenges in the aftermath of the 4 September earthquake

Sector	Biggest Challenges
Building suppliers	• Forecasting demand • Sales down from waiting for rebuilding work to start • Lack of customers
Trucking	• Forecasting demand • Preparedness, planning for crisis • Logistics (especially storage) & lower sales
Retail – FMCG	• Stocking issues • Supply Chain • Non/structural damage
Lifelines	• Inspection of equipment • Continuing work started before EQ • Shutdown/restarting operations • Increase in demand
Chch CBD	• Customers' perceptions of Chch CBD as not open • Accessing site • Customer spending, cash flow, revenue
Kaiapoi CBD	• Lack of customers/ customers not spending • Relocation • Access to site & Structural damage
ICT	• Increased demand for services • Relocations and access issues • Difficult to access customers in city
Rural farm	• Lifelines disruption • Structural repairs
Rural non-farm	• Cash flow & drop in revenue • Lower customer number & Customers spending less • Supply chain & Logistics
Hospitality	• Staff availability • Cash flow & supply chain & decrease in customer numbers • Customers not spending • Access to sites

Impacts from a hazard event can be mitigated by several factors. Across all sectors, the three factors most cited as being helpful in mitigating the effects of the earthquake are:

- relationship with staff;

- well designed and well-built buildings; and
- critical services were restored quickly or not interrupted

The results from this study identify a wide variety of physical, spatial, and network impacts to organisations that were direct and indirect results of the 4 September earthquake. While the strong ground motion forced a majority of organisations to close due to some level of direct physical damage, such as liquefaction, non-structural damage, stock loss, and prevented site access to name a few, there was a wide variety of disruptive impacts related to the earthquake, and all industry sectors showed unique sensitivities. Many organisations within industry sectors were impacted in a similar manner, which in part is related to industry-specific vulnerabilities.

All of the earthquake-related impacts were not yet manifest at the time of sampling and it is the intention of this research to follow these organisations for a period of 18 months to identify what long-term effects may exist after the 4 September earthquake, while taking into account the greater impacts to some organisations from the 22 February earthquake. The longitudinal study will seek to understand how an organisation's pre-earthquake characteristics affect its ability to recover and adapt to new economic and social environments post-earthquake. The longitudinal study will also investigate the unique challenges faced by organisations within CBDs, some of which have been highlighted by the preliminary results presented so far. Further, the role of organisational networks, business models, and supply chains in recovery will also be examined.