

SUPPLY CHAIN RESILIENCE SOCIAL NETWORK ANALYSIS

Nhi Le¹, Paul Childerhouse¹, Robert Radics² and Nigel Grigg¹

¹ Massey University of New Zealand

² Scion, New Zealand

ABSTRACT

Purpose: To explore the applicability of social network analysis for supply chain resilience assessment. To investigate which social network analysis tools and techniques can be utilised to evaluate a range of supply chain resilience attributes.

Design/methodology/approach: An empirical study of a rural New Zealand agricultural supply chain network was conducted. 39 firms were interviewed regarding their supply chains and in particular their resilience attributes. In addition to the 39 central nodes 283 secondary nodes were identified as unique suppliers and customers. UCINET software was then used to model the network from three levels; holistic network, group level cliques and individual nodes.

Findings: Social network analysis provided a comprehensive approach to model supply chain resilience. Interconnectedness, network structure and actor criticality can be modelled for five resilience attributes: adaptation, robustness, agility, visibility and anticipation.

Research limitations/implications: The range of tools that make up social network analysis have great potential to model complex adaptive systems such as supply chains. There is significant more scope to apply the tool to other settings and a range of supply chain problems.

Practical implications: Enhancing the resilience of supply chains can be initiated by evaluating the current status via social network analyses.

Originality/value: The study provides a map of which social analysis tools can be used to evaluate a range of supply chain resilience attribute. Thus the work has extended the study of supply chain resilience and the contexts in which social network analysis is applicable.

Keywords: Agricultural supply chains, Supply chain modeling, New Zealand, Social network analysis, Supply chain resilience