A Framework for Understanding the Complexity of Regional Production Networks: A Case Study

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Abstract A regional production network could be viewed as a complex network, consisting of an intertwined set of supply chains in a bounded geographical space, linking multiple customers in a particular industry with their associated suppliers. To avoid suboptimal decisions, supply chain managers and policy makers need to recognise the structural complexity of the regional production networks in which the individual supply chains are embedded. The authors propose a framework that allows for the identification of complexity traits in the regional production network structure, which provides an insight into its functionality and operational characteristics. The framework is based on the identification of network topology and structural parameters, including density, clustering and average path length. These parameters are indicative of network responsiveness, adaptability and resilience. The authors have applied the proposed framework to empirical data from the South Australian resource extraction sector to highlight how the regional production network structure could be used as a dashboard to assist both practitioners and policy makers in supply chain governance decision making.

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