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Optimising Harvesting and Processing Operations within the Value Chain

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The New Zealand forest industry is very reliant on both domestic and export markets to continue its expansion. With a strong customer focus in diverse markets, one supply chain implication is the number of grades and sorts that a logging operation is expected to produce. A typical logging crew will produce 8-22 log sorts at any one operation, while harvesting just one tree species (radiata Pine). This not only requires considerable landing space but also complicates the spatial aspects of processing on the landing and the subsequent transportation requirements. This paper provides an overview of the current New Zealand supply chain, as well as differentiating it from the value chain. Applying operational research techniques it highlights the risk that optimising a customer-focused supply chain can negatively impact the value chain. This paper details a specific value chain study whereby mechanised processing was studied for different market scenarios (5, 9, 12, and 15 log sorts) with respect to both product value and the respective operational cost impacts. The study was carried out using economic and work study methods, replicated with two harvesting crews. The study clearly showed an optimum cutting scenario. Expanding this result to the whole supply chain could result in significant value improvement through simplification.