

# **Improving Supply Chain Resilience Against Price Volatility by Long-Term Contracts and Price Adjustment Formulas – Case Study of Wood Processing Industry in New Zealand**

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## **Abstract**

Short-term supply agreements and quarterly pricing based on the log export price are dissuading investment into New Zealand's wood processing, perpetuating the commoditisation of the forest industry and concentrating market risk rather than encouraging adding value onshore and market diversification. Supply, demand, cost, and revenue uncertainties reduce business confidence and discourage investments. A long-term contract with price adjustment is not a zero-sum game. The transparent information, calculability, steadiness, and time for adjustments across the supply chains provide synergies and advantages for the strategic allies. To mitigate risks, long-term contracts with price adjustment clauses are frequently implemented in power generation, coal, nuclear, construction, and oil industries. This price adjustment method benefits commodity suppliers and buyers with steady product flow and long payback period capital investments. Beyond cost reduction and productivity, in these lean supply chains, risk mitigation is essential for the entire payback period. Usually, the allies take significant roles in each other's businesses and have a symmetric relationship. Therefore, they want to build long-term partnerships rather than realise one-time gains. That paper introduces the benefits of the abovementioned solution in decreasing risks and improving supply chain resilience and profitability for all parties.

## **Keywords**

Supply chain resilience, Risk, Long-term contract, Price adjustment and Wood processing 5. (10 font)

## **Biography / Biographies**

**Robert Radics, PhD, MBA, Eng.** is currently a senior lecturer in supply chain management at Lincoln University, New Zealand. His area of interest is optimising agricultural value chains, improving productivity, analysing the impacts of planned policy changes, and economic modelling. Robert uses his 18 years of industry and over 20 years of academic to link science and business. He leads to change, builds teams, improves company culture, and provides research and advice in value generation, sales, value chain optimisation, logistics, operations, sustainability, regional development, economics, and forestry for private and governmental organisations. Robert pursued an MS in Forestry Engineering, an MS in Environmental Engineering from the University of West Hungary, an MS in Economics from Budapest Business School, and a PhD in Forest Biomaterials from NCSU.

**Muhammad Umar, PhD**, is currently a Lecturer of Supply Chain Management at the agribusiness and commerce department, Lincoln University. He holds an undergraduate degree in computer and information sciences, a Master's in project management and a Ph. D in supply chain management. He has worked in the industry for several years before joining academia in 2012. His primary research interest is developing optimal approaches to design resilient and sustainable supply chains where quality, costs, lead time, flexibility, reliability, logistics and risks are effectively managed. Supply chain management (SCM) is an integral part of most businesses and is essential to organisational success.

Nevertheless, SCM boosts customer services and reduces operating costs. Still, SCM also helps sustain human life by delivering food and water to masses; it improves human healthcare and protects humans from climate extremes. Recently, his research has introduced a supply chain resilience framework that has brought together four crucial supply chain management areas: collaboration, knowledge management, logistics and sourcing. Further, one of his papers is recently published in the Journal of Knowledge Management that has contributed to linking the knowledge management areas to achieve supply chain resilience. He has also recently completed one project where his team has introduced Haddon Matrix to report evidence-based supply chain resilience strategies against covid19 related disruptions. Currently, he is working on resilience and optimisation of food, export, forestry-related supply chains in New Zealand.