

Cracking the code: Unravelling how New Zealand's traditional industries commercialise technology

This research sets its sights on unravelling the patterns firms in low- and medium-technology industries follow to commercialise technology. We often assume these firms do little to no innovation. The reality is, we do not have a good understanding of how they innovate. For example, agriculture, forestry and manufacturing firms rely heavily on knowledge and technology created elsewhere for innovation. Gaining access to these technologies is vital for creating innovative products. It is great that firms in these "traditional industries" have access to these external technologies. But how they turn these technologies into innovative products remains a black box.

The journey to success for these firms calls for an understanding of novel patterns they follow that differ from high-technology industries. Research in technology commercialisation tells us that high-tech firms bring scientific knowledge and technologies to market through the typical mechanisms of patents, licensing and spin-offs. But what about those that don't fit the "high-tech" label?

Should You Even Care?

Traditional industries are the backbone of Aotearoa New Zealand's (NZ) economy, contributing over \$80 billion in 2020. Unless you are Xero, the typical mechanisms of patents and spin-offs will not work for you. We need alternatives to these usual commercialisation mechanisms. This research introduces an alternative framing of commercialisation success. It sheds light on the diverse approaches firms in traditional industries can adopt to navigate the complex landscape of commercialising innovation and technology.

The implications are substantial for NZ's traditional industries. Identifying patterns relevant to firms in traditional industries gives them an edge over their competitors. This advantage is because the ability to commercialise technologies differently plays a fundamental role in shaping firms' business models. A business model guides a firm's efforts in creating, delivering and capturing value from its business activities. Knowing the most relevant patterns allows a firm to redesign its business model to commercialise technology more effectively.

Moreover, firms can adopt different commercialisation patterns based on the unique characteristics of their innovation projects. No one project is exactly the same. Hence, why should we expect firms to use the same mechanisms to bring technologies to market every time? Importantly, these patterns are not confined to incremental or process innovations. On the contrary, they can potentially drive radical innovation and transformational change.

For policymakers, this research is a call to action - an invitation to harness the untapped potential of traditional industries. Policymakers should take note of the different patterns and develop targeted policies to stimulate innovation in these industries. By understanding the interplay between technology characteristics, collaborative arrangements, and value creation, policymakers can create an enabling environment for technology-driven growth in traditional industries.

How was it done and what was found?

The basis of the findings originated from data collected across ten firms in NZ's traditional industries. By challenging the status quo of technology commercialisation, four commercialisation patterns were identified from these firms: *scientification*, *optimising nature*, *orchestration*, and *technification*. These patterns offer valuable strategies for accessing and (co-)creating innovations using knowledge and technologies from diverse stakeholders. In a nutshell:

Scientification: Comvita and AgriSea collaborated with universities to test and legitimise the traditional raw materials with known beneficial properties (i.e. honey and seaweed) to bring them into the mainstream market, often for medicinal purposes.

Optimising Nature: SPATnz and Cheddarmaster focused on balancing business sustainability with environmental concerns by using scientific research to optimise the products' nature and processes. Doing so often leads to radical process innovations to improve efficiency and sustainability.

Orchestration: Abodo, Gallagher and Tru-Test incorporated scientific research into product design to create functional and aesthetically pleasing products. Furthermore, they included user-driven approaches by engaging users early and throughout the new product development process.

Technification: Compac, ClimbMAX and Pastoral Robotics aimed to enhance productivity and innovation by leveraging science and technology partners to streamline systems and processes. Automation and technological advancements are used to reduce labour-intensive practices.

Conclusion

The thinking around technology commercialisation needs a revamp. Commercialisation patterns and the associated business models that may work for the high-tech industries are not necessarily a "one-size-fits-all" for traditional industries. This research is the code needed to unlock the technology commercialisation black box for NZ's traditional industries.