

The Australian manufacturing industry is not dying, it's evolving: CSIRO study

Written by The Conversation

Despite the [well publicised closure of some manufacturing sectors](#) in Australia, manufacturing isn't dying. Instead, like industry around the world, it's undergoing a period of significant change as new, disruptive technologies and economic realities take hold and new markets emerge.

There is a role for the manufacturing sector in Australia. Through interviews with 56 stakeholders, three workshops and a survey of industry and government organisations, as well as leading researchers, [CSIRO](#) identified major growth opportunities and what the manufacturing sector needs to do to achieve them.

Currently [Australian manufacturing contributes](#) 6.05% of Gross Domestic Product (GDP), [exports A\\$96.1 billion](#) of goods and employs 56,000 people. This has [fallen from a high in 1995](#), when it contributed to 14% of GDP and employed more than a million people.

High wages, geographical remoteness and a small dispersed local market [are some of the reasons for these changes](#). However consumers are also changing what products they buy which then impacts the type of products made.

Major companies like Boeing and General Electric now look to the world using global supply chains for components for their final product, so Australia has to compete globally.

The innovation resulting from science and technology, such as automation, digitisation and new materials, has changed the equation of what it means to be a manufacturer. Manufacturing is no longer a basic industry that employs low-skilled workers.

Over the next 20 years, Australia's manufacturing industry must transform into a highly-integrated, collaborative and export-focused "ecosystem" that provides high-value customised solutions contributing to global supply chains.

Our research brought up some exciting examples of Australian companies that have already embraced this evolution, setting a standard to follow.

Customised high-margin solutions

We found that demand for more expensive bespoke products is replacing mass-produced products relying on value from producing a lot for the market. New materials, automation, biotechnology and new chemical processes have driven this innovation in manufacturing.

These new technologies enable a new level of customisation. Products like [personalised medical implants](#) and [functional foods](#) and [clothing](#) are already possible thanks to the combination of design services and superior components (such as 3D printing).

Small to medium enterprises (SMEs) make up 97% of Australia businesses. So customisation is an ideal recipe for Australian SMEs to achieve global reach without the need for producing more goods than their competitors.

An example of an Australian company doing this well is [Oventus](#) . They produce an O2Vent mouthpiece for those that suffer sleep apnoea. Oventus uses a 3D scanner to map a patient's mouth, then 3D prints a custom-made mouthpiece that helps stop dangerous pauses in sleep at night. Its custom fit and relative comfort attract a price premium. The company recently listed on the Australian stock exchange and is about to go global.

Collaboration

Too often Australian manufacturers focus on the rival across the street, rather than the looming competition over the horizon.

Our research shows manufacturers need to partner among themselves, either through business partnerships or increased collaboration. [Nautitech](#) and [Northern Light Technologies Australia](#),

for example, were brought together by a mining company to improve underground communications.

These two companies combined hardware from one company and software from the other to provide mobile Wi-Fi coverage for mine sites. It allows miners to monitor worker safety, fleet optimisation, machine performance and also allows autonomous mining and productivity improvements.

Global supply chain integration

In a global marketplace, Australia cannot stand on its own. The Australian market alone is too small - our population is the size of Shanghai, China.

Australia has few multinational companies manufacturing here. However multinational companies do source components from the best suppliers globally and herein lies the opportunity for Australia.

For example, manufacturer [ANCA Tools](#) delivers specifically designed parts to Japan. These parts are made using the company's multi-axis grinding machines.

These machines, designed and built in Australia, are automated and wired up for flexible and precision manufacturing. The components are integrated into Japanese customers' unmanned, factory-wide automated production systems.

Manufacturers need to integrate into international supply chains; using Australia's advanced technology industry and research sector, to stand out from the crowd. One example of this highlighted from our research is [Carbon Revolution](#), a company that pioneered the commercial production of carbon composite car wheels. These wheels are made from a single piece of material.

Carbon Revolution is supplying Ford with wheels for the Mustang Shelby GT350R, making it the first company in the world to supply mass produced carbon fibre wheels on standard equipment

for a major automaker.

The wheels weigh up to 50% less than conventional aluminium equivalents and reduce carbon emissions by up to 6%. Carbon Revolution is now investigating opportunities in aerospace and industrial markets.

Increased role for the research sector

Australia's research sector can play a critical role in the future of Australian manufacturing, providing the significant technological innovation needed to drive future prosperity.

Publicly funded research agencies in Australia are already building stronger industry engagement. In our research, Australian manufacturers have identified the science and technology gaps that need filling.

These companies want to use research results to be able to differentiate, make manufacturing processes more efficient, monitor in real time and drive decision making with data. Australian research institutions need to adapt to these demands.

The establishment of open access hubs such as [Lab22](#) , the [Australian National Fabrication Facilities \(ANFF\)](#) , [industry collaboration spaces](#) in research organisations, researchers in business, industry PhDs and internships are all examples of initiatives to link the research and manufacturing sectors.

Australia has a high level of education, an excellent research sector, vast natural resources, a reputation for quality, keen SMEs and close proximity to a burgeoning Asia. The strengths far outweigh the weaknesses.

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