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Article

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How to future-proof your manufacturing business, why it's important and where to start

The last two years have reminded us that we are a long way from the rest of the world, that supply chains that rely on imports over long distances are vulnerable. This is an opportunity for more product to be made in Australia, with benefits for employment and wealth, both national and personal.

Automation boosts productivity, consistency and quality.

The Federal Government recognises that Australian manufacturers "face a challenging business environment due to the COVID-19 pandemic[1]" – to which can now be added, the conflict in Ukraine, which is seriously affecting supplies of materials, from sunflower oil to neon for microchip manufacture. The Government goes on to say that, "despite historically low interest rates, investment and growth are hampered by low business and consumer confidence".

Its strategy includes action on taxes, energy costs, regulation, trade opportunities, industrial relations and – crucially – encouraging higher levels of investment in technology.

Can we learn lessons from elsewhere? Australia has recently signed a Free Trade Agreement with the UK. The deal offers opportunities but the UK experience also has lessons for Australia, especially about lack of investment in technology.

The UK's NatWest Bank sponsored research, published in 2018, which found that up to £57bn (AUS$99bn) could be added to Britain's economy, by SMEs (Small to Medium Enterprises) alone, if they were as productive as equivalent manufacturing businesses in Germany. Even a business with just 10 staff members could more than double annual revenues.

Technological laggards

The fact is, Australian productive enterprises stand to gain a great deal from increasing robot penetration, for example, because it is currently only just average. In 2016, Australia had an installed robot base of 83 per 10,000 workers in manufacturing, according to the International Robotics Federation (IFR). The global average then was 74. Since then, the global average has increased around 80%, to 126/10,000. In the Asia Pacific region it is even higher, at 134/10,000, and in countries like South Korea and Japan, very much higher still – over 900/10,000, according to the IFR.

The last two years have reminded us that we are a long way from the rest of the world, that supply chains that rely on imports over long distances are vulnerable. This is an opportunity for more product to be made in Australia, with benefits for employment and wealth, both national and personal.

But we have also learned that the flow of labour is not endless. If labour is in short supply, it should be focused on where it adds most value: in areas that require higher skills, agile thinking and fast learning. Repetitive, dirty and dangerous tasks are prime candidates for automation. Improvements in manufacturing and management processes are opportunities to be seized, as well.

But, before we get carried away, the case has to be made. Robots are not the be-all and end-all. Automation has to be done in the right way; it is not just a case of buying a shiny new machine to make everything better.

[1] "Make it Happen: The Australian Government's Modern Manufacturing Strategy - Our plan for Australian manufacturing"

Businesses have to understand what their processes are, what is ripe for upgrading and – most important – how to make them right and how to do it the right way. Trying to take a great leap forward from essentially manual systems to fully automated is like trying to jump on an express train hurtling through the station at 160kph. You're likely to end up squashed.

Digitisation, Automation, Digitalisation

There are three stages in bringing businesses up to world-leading standards. Digitisation is the first step and it's one that most businesses will already have taken, to a greater or lesser extent. It's moving accounts from paper spreadsheets to Excel or similar, which is much the same as putting your vinyl records onto MP3. On the shop floor, it's automated lathes and pre-set press brakes, bottle fillers, milling and grinding machines, or PCB populators, for example. The functions don't change but they will (or should) be done faster and more accurately. In the case of management information, computerised records are more secure and easily accessible from multiple locations. They should provide improved transparency and a single version of the truth, and any amendments or alterations should be able to be fairly easily traced and checked.

But the process of collection is not particularly labour-saving; at this stage, it's still essentially manual.

On the shop floor, data about machine condition, inventory, purchasing, logistics, sequencing and allocation of machines and personnel is still collected by hand. In fact, it may be handled twice: first, written onto a piece of paper and then, manually, inputted from the paper into the computer.

While such a system has the potential to be more secure there is also a lot of room for error – and it can be the devil's own job to find an error when it occurs.

The next stage is automation, including the automation of data collection. Much – if not most – machinery sold since the early 1990s has been supplied with SPC (statistical process control) hardware already installed. Many companies never used it but more and more are realising the value of automated data collection and machine monitoring.

Link up to liberate

It is relatively simple to connect machinery and link it to enterprise planning systems, whether financial or process management. Automating the process of data collection, recording and collating and management time is liberated to devote itself to more productive activities; problem solving, process improvement, more effective scheduling, inventory control and effective deployment of personnel and equipment. The gains from this are potentially huge, in terms of productivity, profitability and competitiveness.

In the next instalment of this series we will look in more detail at technology, in terms of productivity and profitability focus. We will consider examples of how technology is helping manufacturing improve, in Australia and other parts of the world.

After that, we can talk about the ultimate step of digital transformation – digitalisation.

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