



Comment

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More manufacturing explorers needed

IMCRC



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THROUGHOUT my 35-year manufacturing career, my focus has always been on helping businesses improve and optimise their manufacturing operations. Bringing the best of Lean and Six Sigma to the factory floor, saw me busy running production facilities, streamlining business processes and delivering multiple improvement programs, across many industry sectors. Since joining the Innovative Manufacturing Cooperative Research Centre (IMCRC) earlier this year, my focus has switched to manufacturing innovation and industrial transformation. While I had a good understanding of the fourth industrial revolution (Industry 4.0) and its importance for the future of manufacturing, I knew less about its adoption across Australia.

As the lead of IMCRC's Industrial Transformation Program, which

is advancing the wider cause of manufacturing transformation in Australia, my role is to demystify the concept of Industry 4.0 and help manufacturing SMEs understand and explore the opportunities that emerging digital technologies such as AI, robotics, 3D printing, digital twins, and new business models can pose for their business. Importantly this is not just about the technologies, but also the significant value that can be captured and created by associated innovation in business models.

At the core of the program is futuremap – a business diagnostic tool designed to help Australian manufacturing SMEs to advance and transform their manufacturing businesses. Since its launch in 2018, more than 500 manufacturing businesses have participated in futuremap, through either a facilitated

workshop or a one-on-one discussion, and used the tool not only to map their capabilities, but also outline their ambition for adopting Industry 4.0 technologies and data-driven services to strengthen their business in a rapidly evolving market place.

For many businesses, futuremap is the first step in their journey of navigating the why, how, and the what of digital transformation. Having now delivered multiple futuremap workshops and spoken to numerous participating manufacturers over the past few months, one thing has become apparent (and the aggregated results of the futuremap data set supports this) – many manufacturing SMEs are aware of Industry 4.0, but most have yet to act on it.

Business leaders have openly shared through futuremap that they and their management team

understand the concept of Industry 4.0. Yet, they are less confident in understanding its resulting benefits, with only 35 per cent stating that they recognise the competitive advantage Industry 4.0 can bring. Equally, they admit that they fail to regularly discuss the topic and/or possible projects that could kick start their Industry 4.0/digital transformation journey with their employees. This suggests that there is some inertia here that Australian manufacturing SMEs need to overcome.

If I consider how organisations have been educated on Industry 4.0, this is often through industry publications and events that feature case studies representing major organisations and best in class Industry 4.0 implementations. Yes, these are inspiring and demonstrate very well the potential for manufacturers, but

I worry that these examples set the bar too high – creating an unfortunate mental linkage that Industry 4.0 is an unattainable ambition and not suited for many of Australian SMEs.

This is simply not true. In my short time at IMCRC, I have been introduced to several Australian manufacturing SMEs that wholeheartedly embrace the concept of Industry 4.0. They invest in key enabling technologies, explore new business models and collaborate with research organisations and industry partners to transform and grow their organisations.

Exploring manufacturing ideas

Eager to find out how they broke through the inertia and started their transformation journey, I discovered that exploration is central to their business approach. They explore ideas, fund small projects, and provide opportunities for their employees to dream, to put themselves out of their comfort zone, and then strive to achieve the impossible.

As the enabling technologies have become more accessible, technically and financially, these organisations made the decision to simply start – by purchasing their first 3D printer, a HoloLens or similar, with the consistent theme being that this first step was done to try something new.

One great example is HeliMods, a progressive aerospace technology company in Queensland. Tim Kelly, former engineering director, shared with me at a recent futuremap workshop how the company taps into the curiosity of their young engineers and encourages them to try, test and adapt new technologies. “You don’t know if and how it’s going work. Go and try, you will learn.”

So, they did, and developed a means of quickly and cost effectively producing intricate dedicated tooling and vacuum fixtures that were suitable for low-volume, high complexity production of aerospace grade components using additive manufacturing. This one advancement is estimated to save HeliMods upwards

of \$3,000 every time it prevents traditional methods from being used.

Importantly, there was no detailed plan of how and when these new technologies would contribute to the bottom line of the organisation, just a confidence that the benefits would accrue.

Companies like HeliMods have heard the stories from the high-end manufacturers but have not been daunted by that. They have correctly understood that their journey will be different and that they do not need to understand the outcome to make start. Doing something was key.

Measuring success beyond the dollar

As exploration does not necessarily follow a traditional investment model, it is important a business thinks about the way they measure these first steps. Like many exploratory journeys, strict and disciplined targets and measures can impede the creativity that early SME Industry 4.0 adoption may demand. Of course, a business needs

to be aware of the investment it is making and be confident that there is a commercial benefit, but allowing some freedom in how this benefit is measured can be the key to unlocking innovation.

In my younger days in operational consulting I watched a very experienced manufacturer explain to an organisation that investing effort in calculating benefits accumulation as they moved through a significant change was creating a distraction. I remember his words to our client clearly, “trust in the process, the money will come”. While this will not suit all situations, there is a message here for SMEs.

Early explorative steps into Industry 4.0 will create value in many ways – excitement within the teams involved, increased organisational creativity, new skills, new ideas spawned that wouldn’t have been spotted otherwise – and allowing these to build alongside financial benefit could be the key to finding your way in a digital world. **M**

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