



4 May 2016

New Models of Tertiary Education Inquiry
New Zealand Productivity Commission
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Dear Sirs

Submission: New Models of Tertiary Education

Thank you for the opportunity to comment on the above document.

The New Zealand Manufacturers and Exporters Association (NZMEA) represents the interests of manufacturers and exporters throughout New Zealand.

The NZMEA is New Zealand's only focused and independent voice for manufacturers and exporters, representing over \$6 billion in sales per year, with an export value of around \$3 billion. The Association can trace its beginning back to the early history of New Zealand.

The Association also includes in its membership affiliate organisations such as the Wood Processors and Manufacturers Association, E tū (the merged Engineering Printing & Manufacturing and Service and Food Workers Unions), the Heavy Engineering Research Association (HERA), and Plastics New Zealand.


General Comment


The NZMEA and its manufacturing members support the Productivity Commission's inquiry into the tertiary education sector. We believe this review is long overdue and the Productivity Commission is perfectly placed to conduct this work in a balanced, extensive and data-driven way. The NZMEA is also willing to work with the Productivity Commission throughout this process to provide further feedback and input from the manufacturing industry.

The nature of manufacturing in New Zealand requires a highly skilled workforce to stay globally competitive, adapt to changing technology, and create innovative products and processes. The lack of skilled workers is an often-cited reason holding some manufacturing businesses back from further growth – the success of the tertiary sector to produce these high-quality workers is vital to the future success of the manufacturing and exporting in New Zealand. These businesses simply cannot survive in the long term without a flow of high-quality workers that match, and even best those in competing countries – quality staff is an indispensable element for New Zealand manufacturers and exporters to compete globally.

In addition, the manufacturing sector globally is undergoing a digital revolution at the moment, and while there are many uncertainties around what exactly this 'revolution' will involve and how it will be rolled out in countries like New Zealand, one thing is already certain – it will further increase the level of technical skills (not to mention others) required of manufacturing employees at all levels.

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Current Employment in Manufacturing

Manufacturing remains one of the largest and most important employing sectors in New Zealand, providing sustainable, well-paid employment with secure hours – job opportunities that are increasingly important in our changing world of decreasing job security in many fields.

Manufacturing employs 170,900 full time equivalent employees (FTE) as of Q4 2015 (Quarterly Employment Survey). This represents just over 11% of the total full time employees across all industries. This number of FTE's is second only to professional, scientific, technical, admin and support services, at 196,200. Manufacturing employs significantly higher FTE's than construction, at 127,400, retail trade at 138,900 and finance and insurance services, at 53,300.

On this FTE measure, employment in manufacturing was damaged by global conditions of low demand following the Global Financial Crisis due to the highly exposed nature of manufacturing to international conditions - falling 19% between Q1 2008 and the low point in Q3 2012. However, since then manufacturing has been rebounding, gaining 4% back.

On a different measure of employment from the Household Labour Force Survey, manufacturing employs 249,000 people, making up 11% of employment across all industries. This measure includes all workers, not just full time equivalents. For comparison on the same measure, construction employs 205,000, making up just under 9% of total employment, and agriculture, forestry and fishing employs 143,000, at 6% of total employment.

Weekly wages in manufacturing are also higher than both the average and median of all industries, which is the average across all industries, including manufacturing. Manufacturing has higher average weekly wages than those in construction, an area that has had significant promotion and focus in response to construction demands.

Education in fields relating to manufacturing also have high income outcomes over time in many cases, for example, when looking at earnings of bachelor graduates nine years after graduation, Electrical and Electronic Engineering and Technology graduates have the fourth highest median income at \$80,517, Mechanical and Industrial Engineering and Technology, and Manufacturing, Engineering and Technology come in well above the average, ranked 11th and 12th, at \$76,624 and \$76,475 respectively. ¹

At Level 4, on the same measure, Electrical and Electronic Engineering and Technology come in first in median income nine years post study, at \$51,817, and Mechanical and Industrial Engineering and Technology rank seventh, well above the average \$48,949. ¹

Manufacturing currently faces the future challenge of an ageing workforce, and areas of skills shortage. This will present a significant future challenge for the manufacturing sector, as well as the tertiary sector, to respond.

Comments on Tertiary Sector Review

The primary skills gap in the manufacturing sector exists at the level of (highly) skilled technical workers and manufacturing floor team leaders with qualifications at NZQF Levels 4 to 6, and to a lesser extent graduates at Levels 7 to 9 in technical and business disciplines.

A secondary gap exists in the availability of semi-skilled workers. This gap has strong regional / geographic component and the problem often is a combination of a lack of basic skills at NZQF Levels 1 and 2, sometimes even elementary reading and writing skills, and fundamental employability issues. Rapidly progressing technological developments in manufacturing, however, may provide alternatives to employers where semi-skilled labour is not available.

That option is not available where there is a shortage of highly skilled workers.

A root cause analysis of why these shortages shows a multitude of factors, but four components stand out:

1. The replacement of a proven tertiary training system (apprenticeships and, for example, the New Zealand Certificate of Engineering) with the ITO model, which is seen by many of the leaders in manufacturing as a retrograde step. There may be an element of nostalgia involved here, but it is obvious to anyone walking factory floors these days that many of the team leaders and forepersons belong to the last cohort that came out of the 'old system' and replacing them with younger workers with equal or better skills is often a challenge in current settings.
2. A *push* factor: Too many young people and their parents, teachers and other influencers regard attaining a university degree as a preferred option, never mind what the degree is in and what the employment and career opportunities post-graduation may be. Compared to that, they do not see a career in manufacturing that is launched from a tertiary qualification at certificate or diploma levels as attractive. This is based on a perception of pay levels, career advancement opportunities and work environment that is far from reality and fails to recognise the scope of opportunities available in manufacturing. We suggest that fixing that is outside the scope of this review and largely a task the industry itself has to shoulder. However, a government that actively recognises the importance of a healthy manufacturing sector for the sustainable economic development of New Zealand should play an active role in this, too.
3. A *pull* factor: Tertiary institutions, behaving perfectly rationally under the current funding model which incentivises a 'Bums on Seats' approach, are each striving to maximise enrolment in the courses they offer, with scant consideration (or no incentive to consider) of what happens to their 'customers' once they leave. It would not be fair, however, to criticise these institutions for their behaviour. Their behaviour is entirely predictable under government policies that have created an open market in the tertiary education sector, which provides no price signals related to the actual demand in the manufacturing industry, for example. We have a tertiary education system that is largely *output*-focused, rather than being *outcome*-focused. A further aggravating factor of the current funding model is that it focusses much of the energy, innovation and business development activities of tertiary institutions on international students who provide superior margins to the institution under a highly commercial model of education. Efforts to satisfy the demands of the domestic labour market are seen as much less profitable by comparison. This may also be exasperated by the financial situation a number of institutions have found themselves facing in recent years. There is also improvement in the flow of students around tertiary institutions, for example, around 50% of first year students in UC engineering courses do not go through to the second year, such students could be directly to other courses in engineering and manufacturing fields at politics, rather than seeking a degree in a different field. Once again, the current market approach and competitive nature may be holding such co-ordination back.

The increasing specialisation and sophistication of manufacturing technology and processes has meant that beyond a certain level, skills development can only occur within the manufacturing sector (on-the-job training), or is undertaken there much more effectively and efficiently. What we are seeing very little of, however, is integration between training provided by vocational training institutions, for example, and industry. Nor do we see much systematic effort to co-ordinate on-the-job training activities across a multitude of manufacturing SMEs, each of which engage in their own training activities as they see fit, with little or no external involvement or support to improve the efficiency of their efforts.

A further factor that needs consideration as far as satisfying the needs of the manufacturing industry is concerned. Some of the factors described above are or have been at play not only in New Zealand, but in other countries with high levels of manufacturing activity especially in Europe and North America. The 'resurgence' of manufacturing in these countries means that the shortage of highly skilled workers and graduates in technical disciplines we observe in New Zealand exists globally. Given that New Zealand graduates are generally seen as well trained and highly motivated, New Zealand manufacturers not only compete among themselves for a scarce resource, but also face stiff competition from abroad.

How to fix the problem? This is a complicated issue below are a few elements that would form part of a solution we would like to see implemented:

1. A funding model for tertiary education that provides a strong incentive for providers to produce a better match between what they produce and what the economy needs. We are fully aware of the power of choice students have and recognise that tertiary institutions cannot dictate what courses or degrees students enrol in. The government has strong price signals at its disposal, however, and could, for example, reduce or waive tertiary study fees for certain certificates, diplomas and degrees to motivate students to consider tertiary qualifications our economy needs to maintain the momentum of economic development or meet social needs.
2. A more balanced split of investment in universities, polytechnics and institutes of technology to address the current output imbalance in the tertiary sector.
3. A continued focus and extension of general STEM skills throughout the education system. While the secondary elements are out of scope of this review, there should be a focus in the tertiary sector to foster more generalised soft skills that act as necessary starting skills for manufacturing jobs. Such a range of skills and problem solving abilities will also be required more and more as company's adapt to changing technology.
4. An industry-led, government-supported co-ordinated effort to raise the awareness of young people of the opportunities that exist in the manufacturing sector. The Government's recent *Engineering Education-to-Employment Programme* is a step in the right direction.
5. A significant investment in recognising, formalising and improving the efficiency of on-the-job training in the New Zealand manufacturing sector, which is dominated by SMEs. This will have to include an improvement in the attitude some manufacturing leaders have towards contributing to a more formal training of their employees through apprenticeships and other initiatives yet to be developed. There is scope to improve the support available for those undertaking this training – this could not only provide skills for new entrants into the labour market, but also help manage the effect of changing technological and business needs on established workers.

The NZMEA has a role to play in this, and we are actively working in this area, for example, in conjunction with the CDC and Ara Institute, to create a Canterbury Manufacturing Pathway Programme to promote the sector and related education opportunities.

Should you require clarification, or have any questions on the issues raised in our submission please do not hesitate to contact me on 03 353 2542.

Yours sincerely



Dieter Adam
Chief Executive

1 - http://www.educationcounts.govt.nz/statistics/tertiary-education/life_after_study