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# Innovation Capability - The Food, Beverage and Agri-Business sectors

Report for Hargraves Institute and Food Innovation  
Australia Ltd (FIAL)

June 2015



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## List of Abbreviations

ABDC	Australian Business Deans' Council
ABS	Australian Bureau of Statistics
AWAPA	Australian Workforce and Productivity Agency
F&B	Food, Beverage and Agri-Business
FIAL	Food Innovation Australia Ltd
HI	Hargraves Institute
LSE	London School of Economics
MM	Management Matters
MNCs	Multinational Corporations
MPS	Management Practice Score
OECD	Organisation for Economic Cooperation Development
UTS	University of Technology Sydney

# Executive Summary

According to the 2014 Australian Innovation System Report, multifactor productivity in Australian manufacturing has continuously declined since 2004 and today Australia's innovation system is considered a "mid-range performer among Organisation for Economic Cooperation Development (OECD) countries". Against this backdrop, both insight and action are required to ensure the long-term prosperity of Australia's manufacturing sector and, in particular, Food, Beverage and Agri-Business (F&B).

This report identifies factors that drive productivity and evaluates which of these factors require attention in the Australian F&B sector. By demonstrating the key link between management practices and the economy's capacity to foster innovation, productivity growth and competitiveness, this report also provides guidance for policy makers as to how they can best support the F&B sector. Although the intangible nature of management makes it difficult to measure these practices, the use of an innovative survey method developed by researchers from the London School of Economics, McKinsey and Stanford made it possible to measure management practices in the Australian context and to evaluate likely risks and potential benefits.

Through extensive data analysis and conversation-mode interviews, this study gives a clear indication of the state of play in this sector, which employs close to one quarter of a million people and accounts for 1.5% of Australian GDP. The study also compares Australian management practices in the F&B sector with the same sectors in fifteen other countries, including Europe, Brazil, China, India Russia, the US, Japan and New Zealand. Additionally, a domestic level comparison is provided for the Australian F&B sector, across States, industries and different firm sizes.

## How Australian Management Measures up for the F&B sector

A key objective of the research was to identify what determines high performance and to benchmark Australian F&B manufacturing companies against a cross section of the global best. Based on a qualitative survey of 439 medium-to-large sized manufacturing firms in Australia, with an extension to a smaller sample of service companies, this report ranks Australian management in the F&B sector across 18 dimensions of management practices, which are grouped into three broader areas: Operations, Performance and People Management. This study draws upon 20% of the sample-frame, which is 92 companies in the F&B sector from the full sample of 439 companies of size 50-5000 employees, and a sub-sample of 82 companies of size 100-5,000 employees compatible with the London School of Economics sample company sizes.

The study found that Australian management practices currently rank in the global second tier of the sixteen countries sampled, with a significant gap separating Australia from the best

performers, namely Japan, Sweden and the US. Of the three key areas of Operations, Performance and People Management, the findings suggest that the Australian F&B sector needs to build operations and people management capability to bridge this gap and to ensure the long-term viability and contribution of this sector to the Australian economy.

On the domestic front, the best performing states in overall management practices are Queensland and South Australia, and the worst performing states are New South Wales and Victoria. In particular, Queensland and South Australian large companies perform better than medium-sized companies over New South Wales and Victoria. The Australian industry comparison found that while the F&B sector's overall management practices scores – ranking fourth - were not statistically worse than the leading industries, significant improvement is needed particularly in operations and people management.

The study found that drivers which most effectively predict better management in the Australian F&B sector include education, autonomy and ownership. Building scale in individual companies is critical, along with decentralised decision-making. In addition, this study draws from lessons learnt when comparing management practices of large domestic and multi-national companies. Key findings include:

- Multinationals outperform domestic companies in management performance.
- The greater the level of education of management and its employees, the greater the likelihood of better management practices being identified and effectively executed.
- Larger firms tend to have more resources and therefore outperform smaller companies across all 18 dimensions.
- When decision-making is delegated to lower levels in an organisation, the decisions are often better better-informed and employees can be encouraged to trial innovative practices and processes to improve the overall efficiency of the organisation.

## Implications for Australian F&B Companies

The results of this study demonstrate that management practices are closely associated with company performance and productivity, and this is certainly the case in Australian F&B manufacturing.

The study identifies the need to improve specific areas of management practices in the F&B sector, namely in operations and people management, which includes attracting, developing and retaining talent, and identifying innovative but practical ways of developing human capital to improve performance and added value to organisations. From these results, it goes without saying that Australian managers must give more attention to building their people management skills and the relationships within their organisations.

Other findings in this study include:

- Whilst there are pockets of excellence, the Australian manufacturing sector is 'stuck in the middle' in terms of wages and management performance, with neither a low-wage cost base, nor high-performance management practices.
- Australian managers tend to over-rate their own performance against the benchmarks, which is a major barrier to unlocking latent productivity that could greatly assist with improved management practices.

Overall by investing in better management practices, technology and other innovations, productivity will increase and in so doing enable the F&B sector to maintain a competitive position despite higher nominal wages when compared with other innovation-driven economies characterised by significantly lower wages.

### Implications for Policy Making

Given the increasing competition from international markets, the Australian Workforce and Productivity Agency (2013) recommended that 'a successful transition will require strong industry leadership, supported by appropriate government policies and programs, including skills and workforce development. Employers must become more outwardly focused.'

Indeed, the government has an important role to play in complementing the strategies undertaken by the F&B sector to be competitive in the future. Much of this rests on either co-funding initiatives or ensuring appropriate government support to improve the skills and knowledge of the F&B sector workforce, including leadership and management skill development at the senior levels through to the operational divisions of its workforce through TAFE and other relevant courses.

Furthermore, given the important role that multinational corporations can play in lifting overall performance and productivity in Australia, there is merit in looking at ways to increase the role of these companies in supply chains and networks in order to more fully benefit from their activities in Australia. This could be achieved through more targeted foreign investment policy in targeted areas, as well as through local industry development policies which encourage collaboration and industry clustering between domestic companies and MNCs. This industry policy would complement rather than substitute for market activities and could play a major role in strengthening the overall competitive advantage of Australian businesses.

In sum, the best approach could be a composite policy agenda to support the emergence of innovative corporate cultures in the F&B sector that are capable of developing strategies to ensure long-term viability and an effective contribution to Australian employment and productivity.

## Conclusion

While F&B manufacturing has been one of the better performing Australian sub-sectors, it faces a considerable threat to its relatively strong performance, as indicated by the Australian Workforce and Productivity Agency (2013). Indeed, given the limited size of the Australian domestic market and the intensity of competition from overseas, a national strategy needs to be devised in order to ensure the future viability of this sector.

This report echoes the findings of other reports and highlights the significance of management practices and their impact on innovation, productivity growth and competitiveness. This report also shows that there is considerable room for improvement in the quality of management practices in Australian F&B manufacturing firms.

Furthermore, every economy and industry sector, whether manufacturing or services, is affected by unpredictable and uncontrollable external factors. A high level of management calibre enables companies to develop robust internal capabilities that can help accommodate the impact of these external shocks.

Consequently, we believe that a national strategy should focus on the need to upskill the sector's workforce and management while fostering entrepreneurial leadership qualities at senior management levels. The end result would be a step change improvement in the productivity performance of the economy.

Overall, the research findings suggest that national debate and consensus about the productivity performance of our economy is overdue. This debate should include rethinking how Australian companies and organisations are managed. The openness of domestic and international markets, the role of infrastructure and the quality of our training and education systems are all important, but so too are the management practices of organisations in adapting to and shaping future opportunities.



### **Recommendation 1**

Australian's management practices in the F&B sector are globally ranked second tier, highlighting the need to strengthen operations and people management skill capability to reduce the gap between Australian management practices and those of the leading countries. Reducing the gap between Australian management practices and those of the first tier of countries is important to ensure long-term viability and contribution of the F&B manufacturing sectors to Australian employment and economic prosperity. It is recommended that policy is focused towards supporting the lower performing Australian F&B manufacturing firms as a strategy for lifting the industry as a whole. Key support should be directed towards firms operating in New South Wales and Victoria (the two lowest scoring states for management practices) and small and medium sizes firms, who performed significantly worse than large multinational corporations.

### **Recommendation 2**

Education has been identified by this study as a key driver of better management practices. It is therefore recommended that policy be directed towards increasing education levels in the F&B manufacturing sector for not only top managers, but throughout all levels of employees. In order to improve management skills gap through education, the following is strategies are recommended for policy makers:

- Support initiatives aimed directly at educating existing managers. Policy options range from providing incentives to support direct and/or indirect education strategies.
- Fund further targeted research to support organisational decision-makers in their deliberations as to which practices add the most value in terms of driving innovation and productivity.
- Use policy tools to support “train-the-trainer” types of strategies. Whilst we do not have readily accessible evidence confirming this, the need to address skills gaps is substantiated by the presence of vibrant consulting and professional education markets.
- In the spirit of a ‘rising tide lifts all boats’ strategy, provide training and leadership to the VET sector to support the broad-based uptake of education offerings.

### **Recommendation 3**

This study has found that organisations which see the need to centralise decision-making and control perform significantly worse than those which decentralise. Decentralised decision making and control can influence better management practices as it allows those who are closer to organisation activity to implement more informed innovations and frees organisational participants who more efficiently trail innovations. Things can be learnt from corporate and MNC organisations as they are generally better managed in comparison to smaller, family owned firms and can play an important role in lifting overall performance and productivity in Australia. Therefore it is recommended:

- For policy makers to looking at ways to increase the role of these companies in supply chains and networks in order to more fully benefit from their activities in Australia.
- This could be achieved through more targeted foreign investment policy in targeted areas, as well as through local industry development policies which encourage collaboration and industry clustering between domestic companies and MNCs.

# Scope of the Report

The Management Matters (MM) research project for the food, beverage and agri-business sectors (F&B) has been undertaken by the University of Technology Sydney (UTS) Business School for the Hargraves Institute (HI) on behalf of Food Innovation Australia Ltd (FIAL). This research project uses the 2009 MM data set to evaluate and understand the innovation, leadership and business capabilities across the Australian food, beverage and agri-business sectors (ANZSIC code 21).

In addition to presenting key findings from prior work relevant to this study, this report presents new analysis from the Management Matters research study (2009) data set. We acknowledge that this study is limited in its scope by the absence of other relevant variables not captured in the 2009 study, however this study will attempt nevertheless to address the following key questions:

1. How does the F&B sector perform compared to the rest of the manufacturing sector in Australia?
2. How does the Australian F&B sector perform compare with similar industries overseas?
3. What are the parameters that drive productivity and which of these parameters require attention in the Australian F&B sector?

The research findings pave a pathway for Food Innovation Australia Ltd (FIAL) to conduct targeted research to identify and develop effective strategies to help Australian companies successfully compete with the growing number of overseas competitors in the F&B sector. We include an evidenced-based research proposal in Appendix B that explains how UTS Business School could support FIAL in achieving their objectives.

Discussions with FIAL representatives indicated specific interests in the following aspects of the research:

1. Insights and differences between the F&B and other sectors in terms of manufacturing, innovation and risk;
2. Insights and differences between the F&B and other sectors in terms of internal management practices and business approaches to market;
3. The differences between small and large as well as family-run and corporate approaches to manufacturing management and operations; and
4. The existence of any gaps in our understanding of what constitutes good practice and general identifiable principles that show contributions to value-add.

Given the limitations in the MM 2009 data set, UTS Business School was unable to comprehensively address all of these issues. For example, data on the risk profiles of companies is not available in the 2009 MM dataset. However we do address the key issues

on which the data set is able to shed light, such as gaps in management capability and the impact of investing in innovative management practices that pose a risk on performance. The accompanying research proposal suggests ways to extend this study to provide analysis and commentary on these and other strategically important issues, as highlighted in this report.

# Manufacturing Landscape

## The Australian Manufacturing Landscape

*'Australia's innovation system is a mid-range performer among OECD countries'*

(Commonwealth of Australia, 2014a, p. 1)

The measure of efficiency by which an economy transforms inputs into outputs is captured by estimates of national productivity statistics. Australia's labour productivity is ranked 12<sup>th</sup> out of all OECD countries, with a relatively high labour productivity of US\$55.5 per hour worked in 2013, compared to the OECD average of US\$47.4 per hour worked. Labour productivity, however, is not uniform as industry sectors exhibit a diverse array of labour productivity performance outcomes (Eslake, 2011). Mining is the only sector with labour productivity that exceeds the OECD median measure. All other sectors are at or below the OECD median (Commonwealth of Australia, 2014a). Multifactor productivity is a better and more comprehensive measure of productivity as it captures both labour and capital inputs into the delivery of outputs. Multifactor productivity in Australia has declined since 2004 following a sustained period of growth. The innovation white paper *Powering Ideas – An Innovation Agenda for the 21st Century* emphasises that Australia's productivity depends on the innovation capacity and performance of companies. The subsequent *Management Matters in Australia (2009)* report suggested that Australia's trend in poor productivity performance will only be reversed if the overall management capability and performance of the critical mass of the poorly managed manufacturing companies are improved.

## Productivity in the Australian Manufacturing Sector

The manufacturing sector, more so than other Australian industries, faces a considerable threat internally from rising costs and inefficiencies as well as externally from intensifying international competition, particularly from China and similar growing manufacturing-focused nations. With a consistently high dollar and falling commodity prices, Australian manufacturing companies have found it increasingly difficult to remain competitive internationally. An increasing number of manufacturing operations in Australia have either ceased to exist or have relocated abroad. Therefore, it is not surprising that the manufacturing sector has been one of the poorest performing industries in Australia. Since 2001, the average annual growth rate in the production of goods and services has been the lowest in the manufacturing sector.

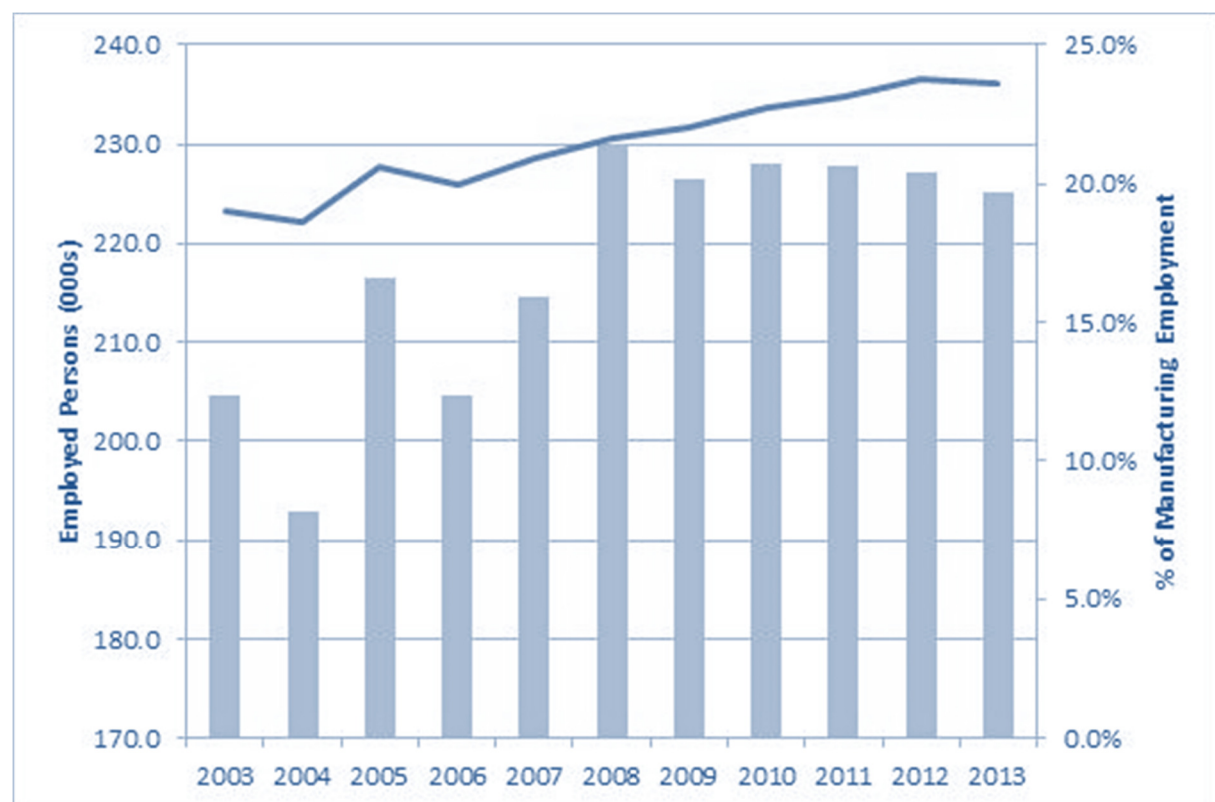
The manufacturing sector has also experienced a consistent downward trend in its profit margins over the last decade. The combination of falling profitability and a contraction in manufacturing activities explains the downward trend in employment levels and the

decreasing size of the sector as a percentage of GDP. As manufacturing accounts for about 7 per cent of the size of the Australian economy and employees over 900,000 Australians (ABS, 2013, 8155.0), innovation in the industry is imperative in order to ensure continuing economic prosperity in Australia. By improving managerial capacity in the manufacturing sector through a process of managerial innovation, the capabilities and productivity of the Australian economy can be significantly improved. By failing to meet this objective, the size of the manufacturing sector will erode further and impact negatively on the level of national economic performance.

## Productivity Performance of the F&B Sector

Of the various sub-sectors that comprise the manufacturing sector, the F&B sector (including agri-business) has been one of the stronger performers in terms of employment and profitability growth. The F&B sector employs close to one-quarter million people and represents approximately one quarter of the overall manufacturing sector (see Figure 1).

**Figure 1 - Employment - F&B and Total Manufacturing, Yearly average 2002-03 to 2012-13**

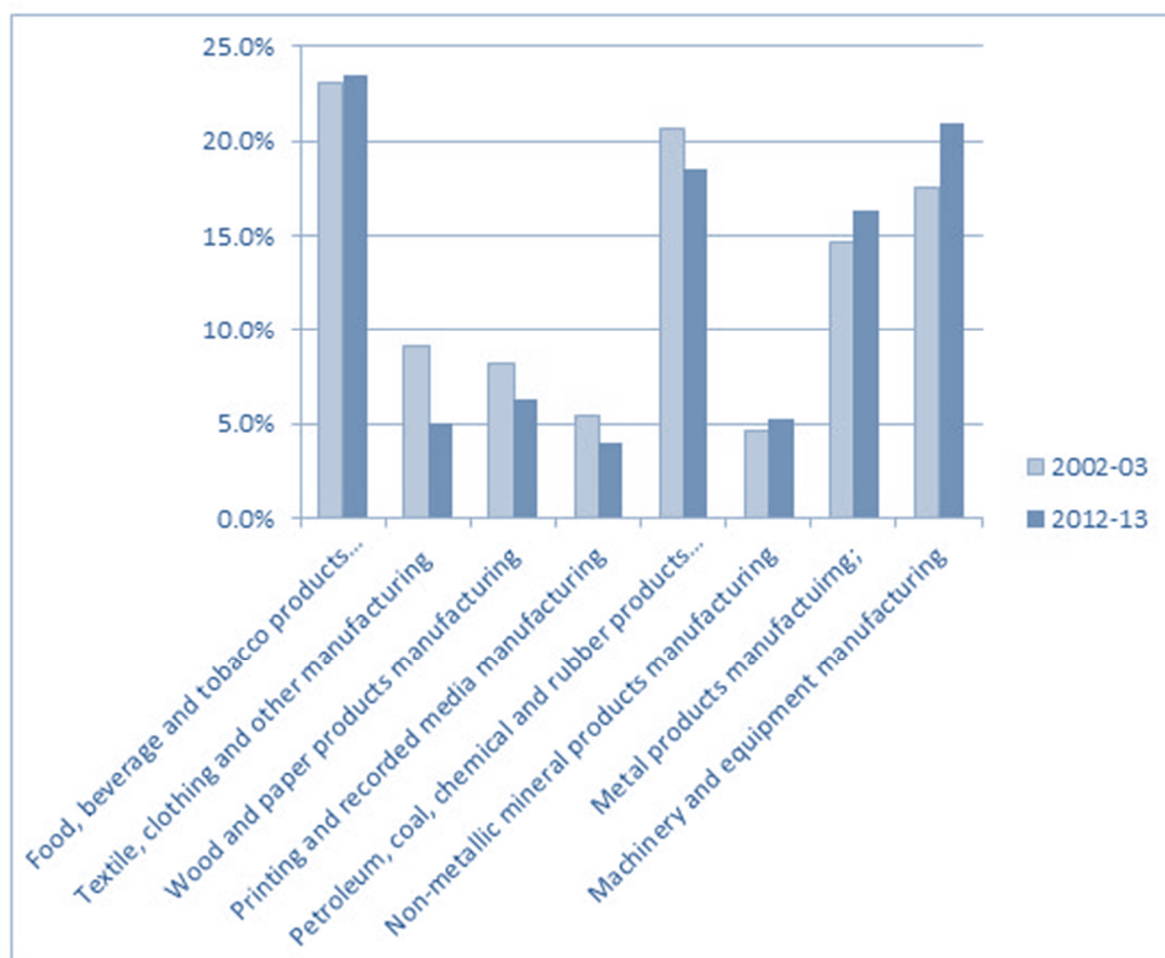


**Source:** ABS, Labour Force, Australia, Detailed, Quarterly, Original Cat No. 6291.0.55.003. Note: Average calculated by summing financial year quarters and dividing by four - see

<http://www.industry.gov.au/industry/IndustrySectors/FoodProcessingIndustry/Pages/AustraliasFoodProcessingIndustryFactSheet.aspx>

The F&B sector is the largest of the manufacturing sub-sectors measured as a percentage of GDP (approximately 1.5% of GDP) and is equal only to machinery and equipment manufacturing. As shown in Figure 2, the F&B sector is the largest contributor to total manufacturing value added. Only four of the eight categories of manufacturing activities illustrated in Figure 2 increased their contribution to total manufacturing value added over the period 2002-03 to 2012-13. The other four industries experienced significant declines, particularly in textiles, clothing and related manufacturing.

**Figure 2** - Contribution to Total Manufacturing Value Added, 2002-03 and 2012-13



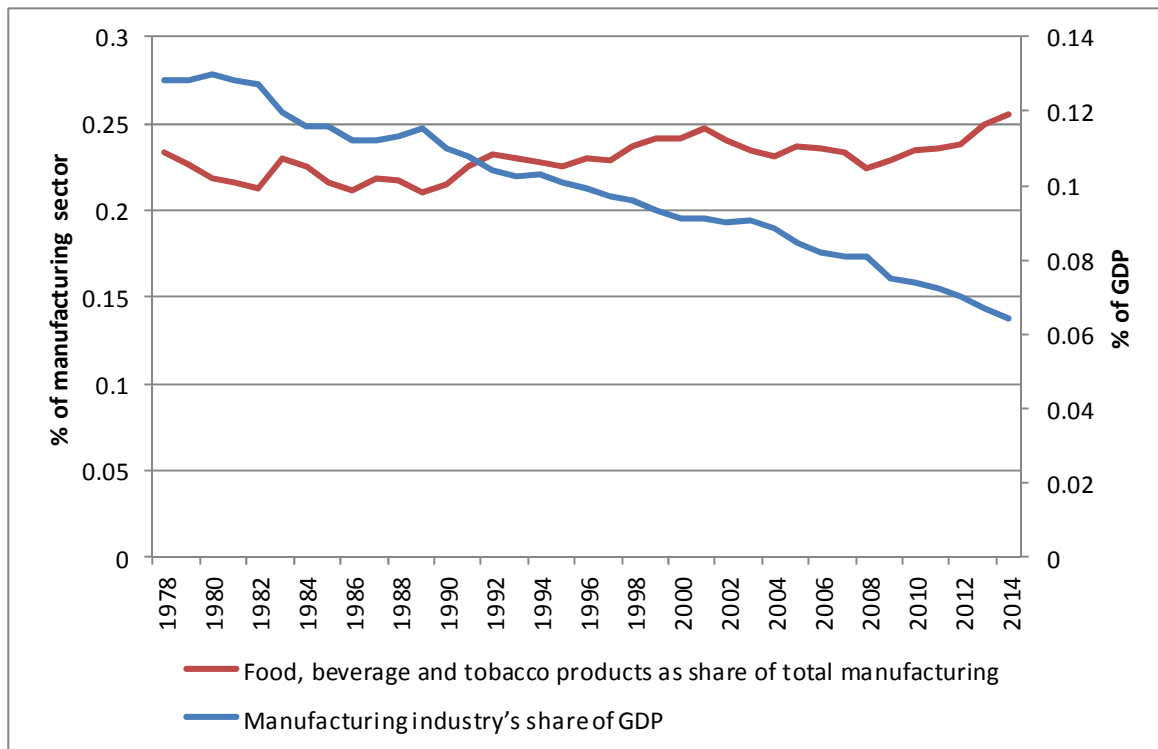
**Source:** ABS, Australian National Accounts: national income, expenditure and product, Cat No. 5206.0

<http://www.industry.gov.au/industry/IndustrySectors/FoodProcessingIndustry/Pages/AustraliasFoodProcessingIndustryFactSheet.aspx#>

The share of F&B in total manufacturing has been increasing steadily since the early 1990s, following the general downward trend since 1978 (see Figure 3). From 1978 to 2014, the overall Australian manufacturing sector declined from approximately 13% to 7% of GDP. The increasing share of the F&B sector in total manufacturing highlights how the sector has

contributed to softening the otherwise rapid decline of overall manufacturing as a percentage of Australian GDP.

**Figure 3 – Relative size of Manufacturing and the F&B Industries**



Source: Australian Bureau of Statistics (ABS), [Australian national accounts: national income expenditure and product](#), cat. No. 5206.0.

In a recent report, the Australian Workforce and Productivity Agency (AWPA) (2013) emphasised that the F&B industry faces considerable threat to its relatively strong performance. Given the limited size of the Australian domestic market and the intensity of competition from overseas, a national strategy to transform the currently fragmented industry to a larger scale, capital-intensive operation has been suggested. This strategy would need to ensure the upskilling of the sector's workforce and management while fostering entrepreneurial leadership qualities at senior management levels. *Improving management practices is therefore an essential requirement for the future prosperity of the F&B sector in Australia.*

The focus of this report is to examine the management performance in this sector as a driver of organisational productivity for manufacturing as a whole. By considering 18 dimensions of management practices, grouped into three distinct areas of management (operations, performance and people management), we consider how the management performance in this sector compares to that of other industries in Australia and those that are similar in other countries, as well as identify key gaps in performance. The recommendations from this report will have implications for the future success of the food and beverage sector in Australia.



# Management Practices and Economic Performance

Critical to the evaluation of management performance is the evaluation of which practices are 'better.' A key strength of the LSE method is that the identified management practices have been evaluated in a number of different contexts, including in over fifteen diverse countries. In order to determine the merit of the 'better' management practises, each study first evaluated whether the 'better' practices were associated with measures of labour productivity and company performance. Some of these studies have been published in top international peer-reviewed academic journals, including in the *Quarterly Journal of Economics* (Australian Business Deans' Council (ABDC) journal ranking A\*), *International Journal of Production Economics* (ABDC A\*) and *International Journal of Production Research* (ABDC A). Each of these studies has found that the management score is associated with a number of productivity and performance measures, including labour productivity, market performance and exportability.

Each of these studies has been careful to point out that a correlation between the management score and performance is not proof of causality. To that end, a field experiment was conducted on large multi-plant Indian textile companies to identify whether changing the management practice improved performance in a causal way (Bloom, Eifert, Mahajan, McKenzie and Roberts, 2013). Whilst there was significant overlap, the management practices in this experiment included a more precise set of management practices than those from the LSE method (38 binary indicators in Bloom et al (2013) vs. 18 practices measured using a 1-to-5 scale in the LSE method). When comparing the control to treatment plants, they found:

*'Adopting these management practices raised productivity by 17% in the first year through improved quality and efficiency and reduced inventory'* (p. 1).

Bloom et al. (2013) also found that the key reasons why organisations had not adopted better management were informational<sup>1</sup> and limits on management time. Notably, *'Competition had not forced badly managed firms to exit'* (p. 2).

Table 1 presents the association between a set of performance measures and the management practices score for the Australian F&B sector. Whilst we only have data on a subset of companies in the F&B sector (between 59 to 67 companies), the sample is large enough to conduct a simple test for association. We found that the management score is positively associated with corporate productivity and performance, with all being significant

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<sup>1</sup> Informational reasons range from managers and owners being aware of a practice and not believing it would improve performance to not being aware of the practice.

with the exception one measure. With a larger data set and higher quality accounting information, it will be possible to conduct a more rigorous evaluation, including the economic significance of the association.

**Table 1** - Test for association between management practices and corporate productivity and performance

Variable	Variable description	Direction of association	Significance*	Number of companies with data
Labour productivity	Profit / number of employees	Positive	4%	59
Labour productivity	Sales revenue / number of employees	Positive	18%	64
Profit Margin	Net Income / Sales	Positive	5%	61
Total productivity	Total sales revenue	Positive	3%	67

\* The significance can be interpreted as the probability that the association is due to random error, so the lower the score, the greater the confidence in the association.

Figure 5 below presents some analysis that appeared in the Green et al (2009) report, namely the economic analysis of Labour and Capital Equivalency Association. The sample size for the Australian F&B industry limits our ability to undertake such analysis in a meaningful way for the F&B sector. Based on the complete data set which combines multiple manufacturing sub-sectors together:

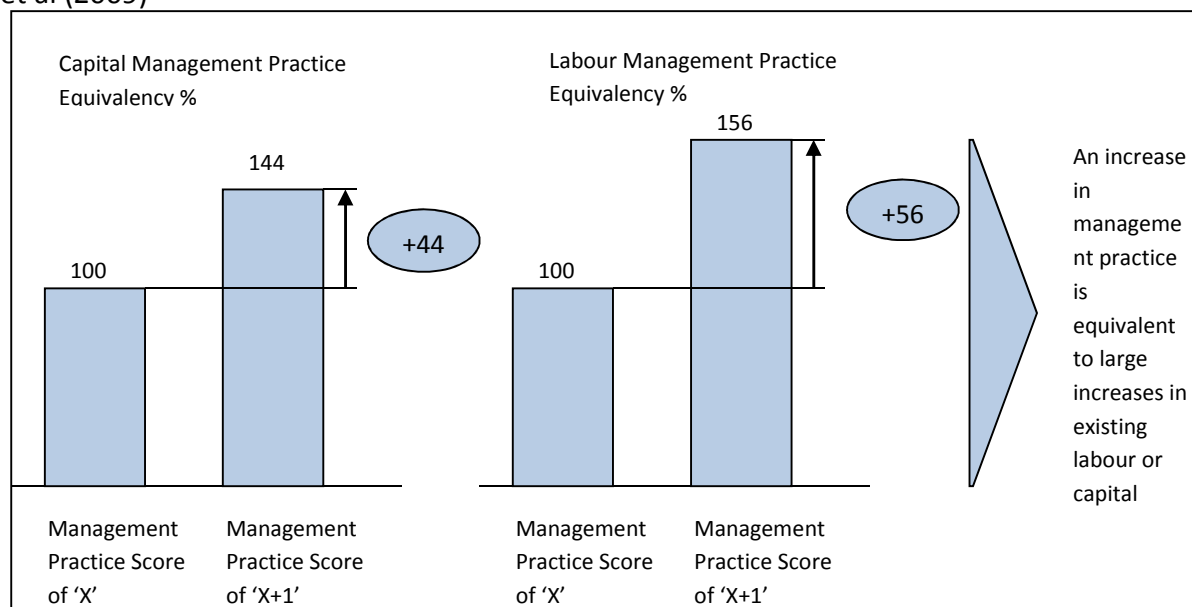
*‘The relative level of firm output associated with an increase of a single point in the management score is equivalent to a 56% increase in the labour force or a 44% increase in invested capital. Although the relationship is not necessarily causal, this finding does suggest that management practices have an economically significant association with sales output for manufacturing firms. One plausible argument this finding suggests is that investing in management practices may be a cost effective way for firms to boost productivity, relative to hiring additional employees or direct investment in fixed capital’ (p. 13 - 14).*

What Figure 5 implies is that investing in management capability can be thought of in a similar way as investing in capital assets. For some organisations, increasing productivity (sales revenue) by investing in management capability would be more efficient than investing in increasing fixed capital or employing more people.

Without reasonable information on the cost of implementing better management practices, it is difficult to comprehensively compare the relative merit of these competing investment choices. Despite this, the findings in Green et al (2009) suggest the relative economic benefits

of investing in better management could be significant. More targeted studies could enable policy makers and organisations to better evaluate these trade-offs.

**Figure 5 – Management Practice – Labour and Capital Equivalency Association from Green et al (2009)**



Source: Green et al (2009), p. 38.

Note: Controls for country, sector, employees, skill and hours worked. Another method used to calculate this association (not reported) generates larger labour and capital increases associated with 1-point improvement in management practices.

### Key Findings

Management practices are associated with corporate performance and productivity in a range of settings, and specifically in the Australian F&B manufacturing industry. Field experiment evidence suggests the link is causal.

### Key Implications for the F&B Sector

Policy makers and organisations in the F&B sectors could invest in improving management quality as a strategy to improve both corporate and national productivity.

## Which Management Practices and How are They Measured?

In a microeconomic context, Delgado et al. (2012) highlights organisational industrial activity, business sophistication and management practices as measurement variables for foundational competitiveness. Recent empirical work by Bloom et al. (2014) found that one quarter of inter- and intra-country multifactor productivity gaps can be accounted for by management practices, whereas multifactor productivity gaps are the proportion of total output growth of an economy that cannot be accounted for by growth in labour and capital inputs. The significance of management practices and their impact on innovation, productivity growth and competitiveness cannot be stressed enough.

Underpinned by this strategic importance, this report has been produced for the F&B sector (ANZSIC code 21), using the data which underpinned the *Management Practices Research Study* conducted by UTS Business School in 2009. This study draws upon 20% of the sample frame, that is 92 companies from the full sample of 439 companies of size 50-5000 employees, and a further 82 companies of size 100-5,000 employees compatible with the London School of Economics sample company sizes. The findings herein are limited to this specific sampling and adopt the methodology and analytical approach as was originally conducted in 2009.

The intangible nature of management practices makes them difficult to measure. However, to measure management practices in the Australian context, we have adopted the innovative survey method and associated tool used globally by researchers from the London School of Economics (LSE), McKinsey and Stanford (Bloom & Van Reenen, 2006; Bloom & Van Reenen, 2007; Bloom and Van Reenen 2010). For details of the research methodology adopted for Australia, refer to Green et al (2009) and Agarwal et al. (2014). This study focuses specifically on ANZSIC code 21 - the F&B sector.

The three dimensions incorporated in the LSE survey were operations management, performance management, and people management practices. The operations management covers dimensions such as the introduction of lean manufacturing techniques, the documentation of process improvements and the rationale behind improvement introductions. The area of performance management concerns the monitoring of dimensions such as tracking and reviewing performance and consequence management. The target-setting section focuses on the type of targets as well as their realism, transparency, range and interconnection. Finally, people management practices include the prevalence of a talent mindset among senior management, reward for top performance, procedures to deal with bad performers, promotion criteria, ways of attracting and retaining high performers. A detailed description of these dimensions are documented in Bloom & Reenen (2006; 2007) as well as in Agarwal et al (2014) as applied to the Australian context. The eighteen dimensions

of best practice management are distilled into a 'management practices score (MPS),' which is the average of the eighteen individual scores.

Management interviews were conducted in a conversational mode; composed of specific, yet open-ended questions revolving around the eighteen management dimensions which provided a clear and detailed picture of management practices adopted by the manufacturing companies. The companies' management practices were interpreted and scored against each of the eighteen dimensions on a scale of 1 to 5, with 5 being the best practice and 1 being the worst practice using the double-blind, double-scoring method. The scores across each of the three management areas – operations, performance and talent – were obtained by consolidating the relevant dimension scores. The overall management score of each company was calculated by averaging the individual management scores across the eighteen management dimensions. Further detail on the research method, including guidance and training and obtaining unbiased responses, is available in Appendix A.

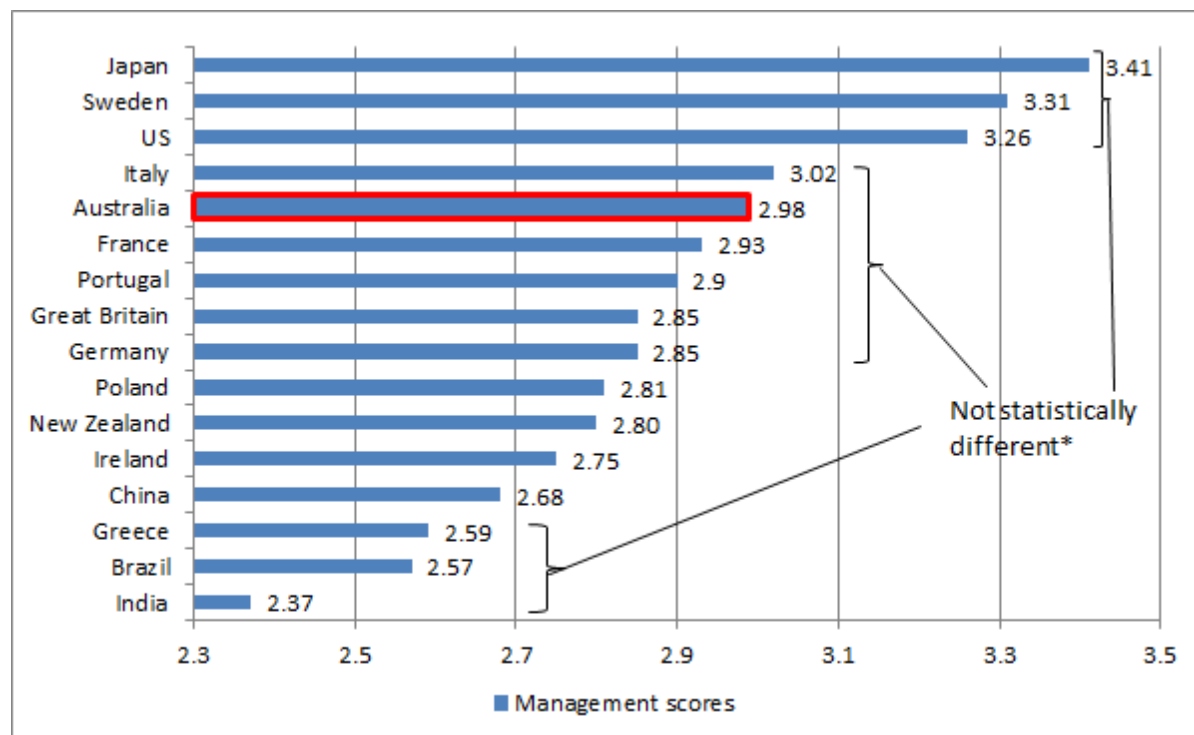
# Global Benchmarking of F&B

## Australian F&B Corporate Performance Benchmarked against 15 Countries<sup>2</sup>

When compared with other countries, Australian management practices for F&B manufacturing are above average, ranking 5th in overall management among the sixteen countries included in the research (Figure 6). However, Australia is significantly worse in overall management when compared to Japan, Sweden and US, with Japan being the best performer. Australia is at par with a group of countries including Italy, France, Portugal, Great Britain and Germany. A detailed comparison (not tabulated) with the worst practices demonstrates that for all dimensions, except instilling a talent mindset, Australian F&B manufacturing is statistically better than the worst performing countries. In terms of overall management performance, Australia falls amidst the second tier of countries, with room to improve in order to match the best performers.

**In terms of overall management performance, Australia falls amidst the second tier of countries, with room to improve in order to match the best performers.**

**Figure 6** - Overall management scores by country showing tiers in performance for F&B sector



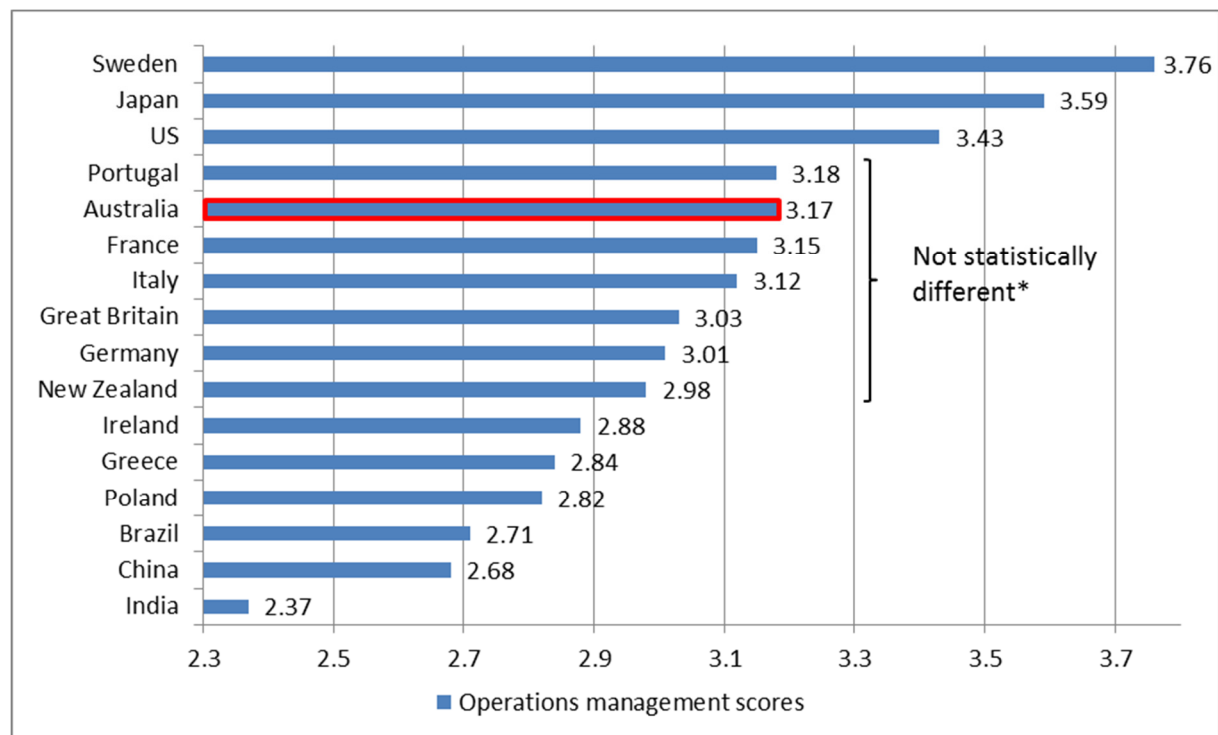
\*At the 10% significance level Source: Management Matters Dataset. Company size – 100 to 5000.

<sup>2</sup> Note: company size is 100-5000 to be comparable to LSE company size.

## Global Benchmarking – A Comparison of F&B Sectors across Operations, Performance and People Management

Australian F&B companies are doing well in the area of operations management, ranking fifth out of sixteen. However, Australia is significantly lagging the best performing countries, Sweden, Japan and the US (Figure 7). Australia belongs to the second-tier countries in operations management. At a more detailed level, Australia is not significantly different to top performers in the area of operations management in two out of seven dimensions - 'Adoption of lean manufacturing' and 'Rational for adoption.' On the remaining five dimensions, Australia is doing statistically worse than the top leaders. Therefore, much more attention is required to improve Australia's F&B manufacturing performance in overall operations management.

**Figure 7** - Operation management scores by country – A global comparison

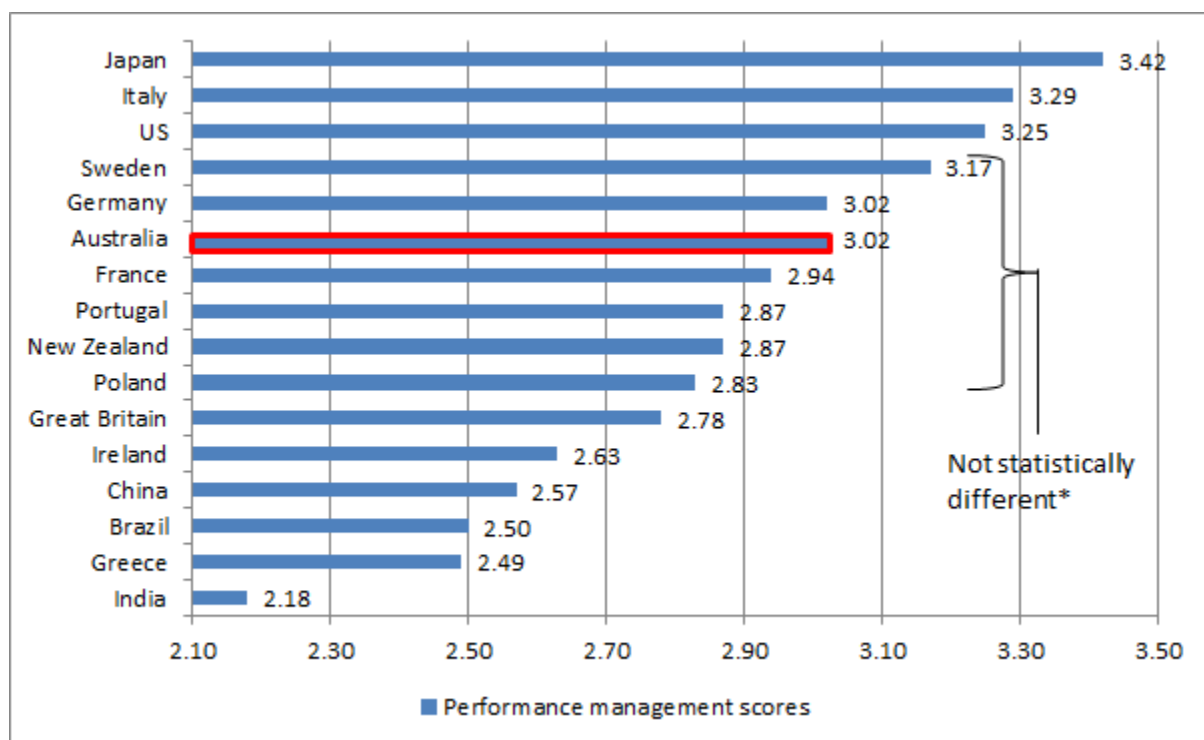


\*At the 10% significance level (Not different from Australian sample) Source: Management Matters Dataset. Firm size – 100 to 5000.

In the area of performance management, Australian F&B companies are doing well, ranking fifth out of sixteen countries. However, they are still statistically worse than the top-tier countries. Japan is a leader in performance management, but Italy and the US also perform better than Australia (Figure 8). While the overall ranking of Australian companies in performance management is reasonably good, their scores are statistically worse than that the best performer in each dimension, except 'Setting stretch goals'. This suggests that there is significant room for improvement in the area of performance management in the F&B sector.

Japan is the best global performer in people management practices, while Australian F&B companies rank sixth out of the sixteen countries. The US, Sweden, Poland and China also perform better than Australia (Figure 9). In comparison to the best performers, Australian scores in people management are statistically different (worse) across all six dimensions, except for 'Attracting high performers.' Therefore, there is a significant need for Australian F&B companies to improve their human resource-related management practices.

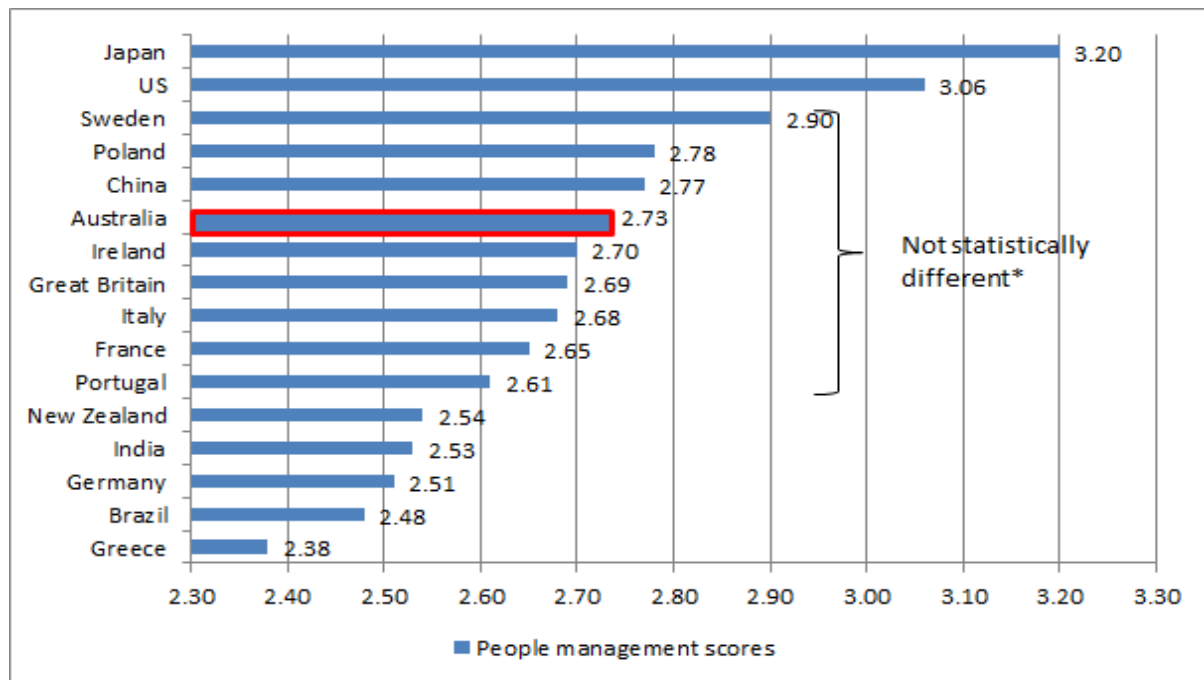
**Figure 8** - Performance management scores by country – A global comparison



\*At the 10% significance level (Not different from Australian sample) Source: Management Matters Dataset. Firm size – 100 to 5000.



**Figure 9** - People management scores by country – A global comparison



\*At the 10% significance level (Not different from Australian sample) Source: Management Matters Dataset. Firm size – 100 to 5000.

Overall, Australian F&B sector companies stand in the second tier of countries in the areas of operations, performance and people management. There is potential for improvement in management practices to achieve the level of top performers (Table 2).

**Table 2 - Management practices performance by dimension**

<b>Area of Management</b> <i>(all rankings are out of 16 countries)</i>	<b>Australia's global ranking</b>	<b>Global best performer</b>	<b>Worst best performer</b>
<b>Operations Management</b>			
<b>Overall score</b>	5	Sweden	India
<b>Adoption of Lean Manufacturing</b> <i>Best practice:</i> All major aspects of Lean have been implemented <i>Worst practice:</i> Other than just-in-time, no other aspects of Lean have been introduced	4	Japan	India
<b>Rationale for the adoption</b> <i>Best practice:</i> Lean was introduced to meet business objectives <i>Worst practice:</i> Lean was introduced to catch up to competitors	6	Portugal	India
<b>Process problem documentation</b> <i>Best practice:</i> Exposing problems is integral to individuals' responsibilities rather than ad hoc solutions <i>Worst practice:</i> No process improvements are made when problems occur	7	Sweden	India
<b>Operations Performance tracking</b> <i>Best practice:</i> Performance is continuously tracked and communicated to all staff using a range of visual tools <i>Worst practice:</i> Tracking is ad hoc, and measures being tracked do not indicate directly if overall business objectives are being met	6	Sweden	India
<b>Operations Performance review</b> <i>Best practice:</i> Performance is continuously reviewed, based on indicators tracked; follow-up ensures continuous improvement <i>Worst practice:</i> Performance is reviewed infrequently and only success or failure is noted	7	Sweden	India
<b>Operations Performance dialogue</b> <i>Best practice:</i> Regular performance conversations focus on addressing root causes. Purpose, agenda, and follow-up steps are clear to all <i>Worst practice:</i> Relevant data are often not present at meetings or discussion is based on data that is not meaningful. Agenda and purpose are not clear	7	Japan	India
<b>Consequence management</b> <i>Best practice:</i> Failure to achieve agreed targets drives retraining or moving individuals around. <i>Worst practice:</i> Failure to achieve agreed targets does not carry any consequences	11	Sweden	Greece

<b>Performance Management</b>			
<b>Overall score</b>	5	Japan	India
<b>Types of goals</b> <i>Best practice:</i> Goals are a balance of financial and non-financial goals <i>Worst practice:</i> Goals are exclusively financial or operational	8	Italy	India
<b>Interconnection of goals</b> <i>Best practice:</i> Corporate goals increase in specificity as they cascade through the business units <i>Worst practice:</i> Individual workers are not aware of how their contribution is linked to corporate goals	5	US	India
<b>Time horizon</b> <i>Best practice:</i> Short-term goals are set so that they become a staircase to reach the long-term goals <i>Worst practice:</i> Top management's main focus is on short term goals	7	Italy	Brazil
<b>Setting stretch goals</b> <i>Best practice:</i> Goals are demanding for all divisions, and are grounded in solid economic rationale <i>Worst practice:</i> Goals are either too easy or impossible to achieve	8	Japan	India
<b>Clarity of goals</b> <i>Best practice:</i> Performance measures are well defined and well communicated; worker performance is made public to induce competition <i>Worst practice:</i> Performance measures are complex and not clearly understood; worker performance is not made public	3	Japan	Greece
<b>People Management</b>			
<b>Overall score</b>	6	Japan	Greece
<b>Instilling a talent mindset</b> <i>Best practice:</i> Senior managers are evaluated and held accountable on the strength of the talent pool they actively build <i>Worst practice:</i> Senior management do not communicate that attracting, retaining, and developing talent is a top priority	14	Japan	India
<b>Rewarding top performance</b> <i>Best practice:</i> The firm provides ambitious stretch targets with clear performance related accountability and rewards <i>Worst practice:</i> People within the firm are rewarded equally irrespective of performance level	3	Japan	Greece
<b>Addressing poor performance</b> <i>Best practice:</i> Poor performers are moved to less critical roles or out of the company as soon as weaknesses are identified <i>Worst practice:</i> Poor performers are rarely removed from their positions	9	US	New Zealand

<b>Promoting high performers</b> <i>Best practice:</i> Top performers are actively identified, developed, and promoted <i>Worst practice:</i> People are promoted primarily upon the basis of tenure	4	US	China
<b>Attracting high performers</b> <i>Best practice:</i> The firm provides a unique value proposition to encourage talented people to join the company instead of the competitors <i>Worst practice:</i> Competitors offer stronger reasons for talented people to join their companies	6	Japan	Brazil
<b>Retaining high performers</b> <i>Best practice:</i> Managers do whatever it takes to retain top talent <i>Worst practice:</i> Managers do little to try and keep the top talent	7	Ireland	Sweden

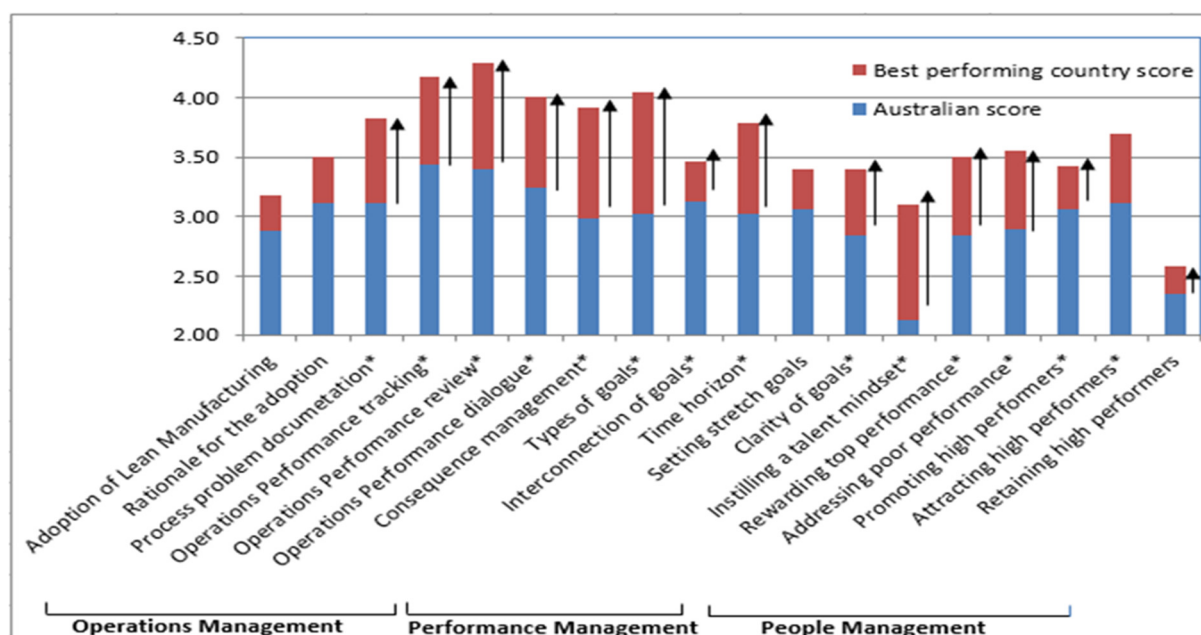
Note: Canada is excluded from statistical analysis of individual questions as the firm-level data of Canada was not available. \*At the 10% significance level (Not different from Australian sample) Source: Management Matters Dataset. Firm size – 100 to 5000.

**Specific dimensions in the areas of operations, performance and people management for Australian F&B manufacturing companies have been identified where Australian scores are significantly behind those of the global best performers.**

To sum up, specific dimensions in the areas of operations, performance and people management for Australian F&B manufacturing companies have been identified where Australian scores are significantly behind those of the global best performers.

Figure 10 shows how Australia ranks in each area and gives the gap with the best performing country. Considerable attention must be given to these dimensions to improve specified management practices and to match those of the global best F&B manufacturing companies.

**Figure 10-** Gaps in the Australian management performance by dimension



\*Australian score statistically different from the global best performing country's score – based on statistical analysis at the 10% significance level. Source: Management Matters Dataset. Firm size – 100 to 5000.

Note: Canada is excluded from statistical analysis of individual questions as the firm-level data of Canada are not available.

## Key Findings

While Australian F&B manufacturing are performing well, overall ranking in the second tier of countries, there is substantial room for improvement in majority of the operations, performance and people management dimensions, with scores statistically worse than the global leaders.

## Key Implications for the F&B Sector

Firms in the Australian F&B sector should direct considerable attention towards improving various aspects of operation, performance and people management in order to remain competitive with global leaders.

# Australian F&B Domestic Benchmarking

## Drilling Deeper into Australian F&B Management Practices<sup>3</sup>

To gain a deeper insight into the performance of the Australian F&B sector management practices, a number of comparisons have been completed including each of the three specific management areas and the overall scores. This section will outline performance differences in the F&B manufacturing sector, firstly between medium and large companies, and secondly between different states across Australia. Finally, the scores obtained by the F&B manufacturing organisations will be benchmarked to those of other ANZSIC codes to determine how this sector is performing compared to other manufacturing sectors.

### Operations, Performance and People Management

The landscape of management practices within Australian F&B companies (sized 50-5,000) requires special attention. The average overall management score for Australian F&B companies is now 2.96, primarily attributed to the inclusion of smaller, medium-sized companies in the analysis, as compared to the global benchmarking where company size was 100-5,000.

In terms of operations and people management, the F&B sector is ranked fifth in both cases, with a MPS score of 3.17 vs. 3.36 (best case) and 2.71 vs. 2.90 (best case), respectively. However for performance management, the F&B sector ranked fourth with a MPS score of 2.99 vs. 3.10 (best case).

In terms of the relative performance of the industry sectors across overall management practices and the three specific management areas, ANZSIC code 21, the F&B sector was found to be not overall statistically different from other ANZSIC sectors. However in some individual cases, certain industry sectors did outperform or underperform the F&B sector, i.e. they were found to be statistically better or worse (see Figure 11).

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<sup>3</sup> Note: company size is 50-5,000 to be comparable to LSE company size.

**Figure 11:** Average management practices scores for the F&B sector across the 18 dimensions

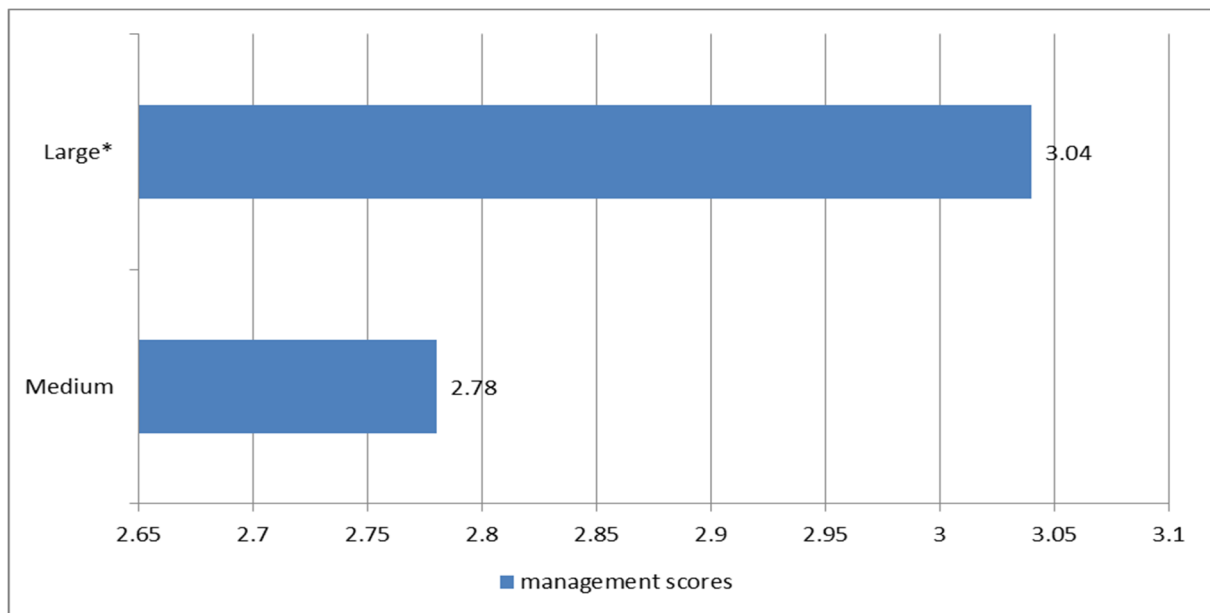
	<b>Operation</b> Average score 3.17	<b>Performance</b> Average score 3	<b>People</b> Average score 2.71
3.5 Better performance 3 Worse performance 2	Operations Performance tracking Operations Performance review  Operations Performance dialogue Rationale for the adoption Process problem documetation Consequence management  Adoption of Lean Manufacturing	  Interconnection of goals Time horizon Setting stretch goals  Types of goals  Clarity of goals	 Promoting high performers Attracting high performers  Addressing poor performance  Rewarding top performance  Retaining high performers  Instilling a talent mindset
<b>Types of Management</b>			

## Medium vs. Large Companies

Based on the ABS classification for F&B companies, only medium and large companies were used for this research. The findings of the study illustrate that large Australian F&B companies perform significantly better than medium-sized companies in the areas of performance and people management, while the difference is not statistically significant in the area of operations management. Looking at a more detailed level, large-sized companies have better management practices than medium-sized F&B companies across all the eighteen dimensions. Overall, the performance of large Australian F&B companies is statistically significantly better than the performance of medium-sized food industry companies (Figure - 12).

**Australian F&B companies perform significantly better than medium-sized companies in the areas of performance and people management...**

**Figure 12** - Overall management practices scores for medium and large F&B companies



\*Statistically significantly different from the rest of the sample. Firm size – 50 to 5000. Source: Australian management practice research

### Comparison of the F&B Sector Across the States

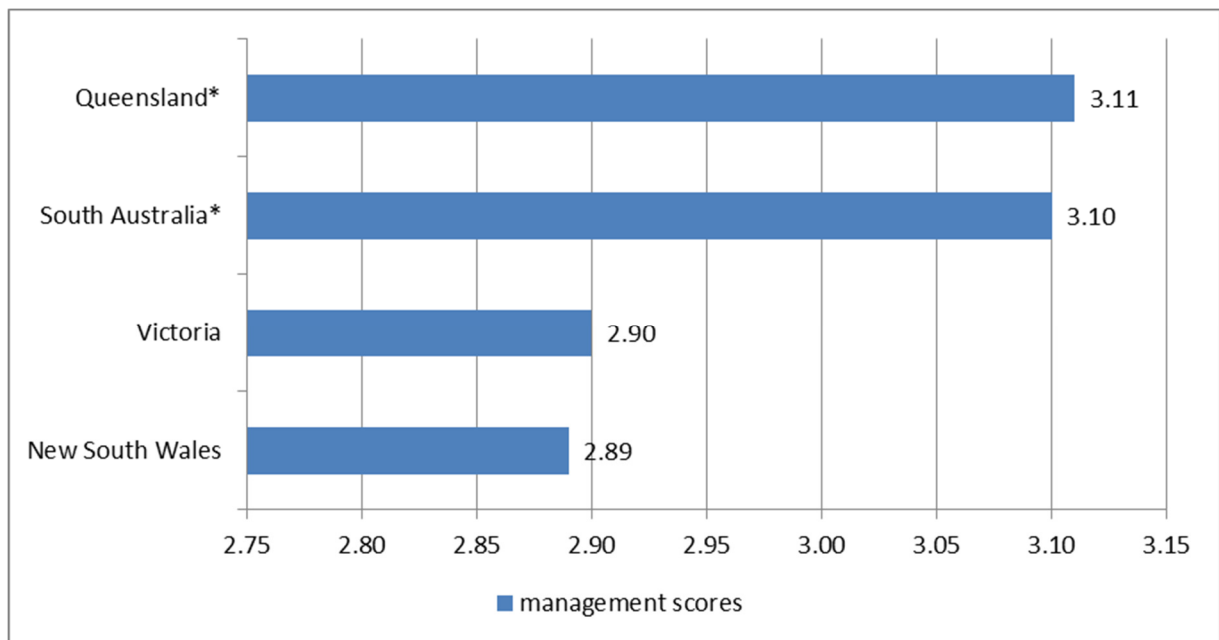
The results of the research show that management practices in the F&B sector differ across the states. The best performing states in overall management are Queensland and South Australia and the worst performing states are New South Wales and Victoria (Figure 13). The difference between the best and the worst two states was found to be statistically significant, meaning that F&B sector companies from Queensland and South Australia outperform those from the other states.

**The best performing states in overall management are Queensland and South Australia and the worst performing states are New South Wales and Victoria.**

A comparison of states across the three management areas of operations, performance and people management demonstrates that there is variance between states in management practices (Figure 14). Queensland and South Australia perform significantly better than New South Wales and Victoria in overall management, performance and people management, while there is no statistical difference between states in the area of operations management.



**Figure 13** - Overall management scores by state



\*Statistically significantly different from the rest of the sample. Note: Tasmania and Western Australia are not included due to negligible sample size 50-5000. Source: Australian management practices research; Tasmania and Western Australia are not included – sample size too small.

**Figure 14** - Relative state performance across the three management areas

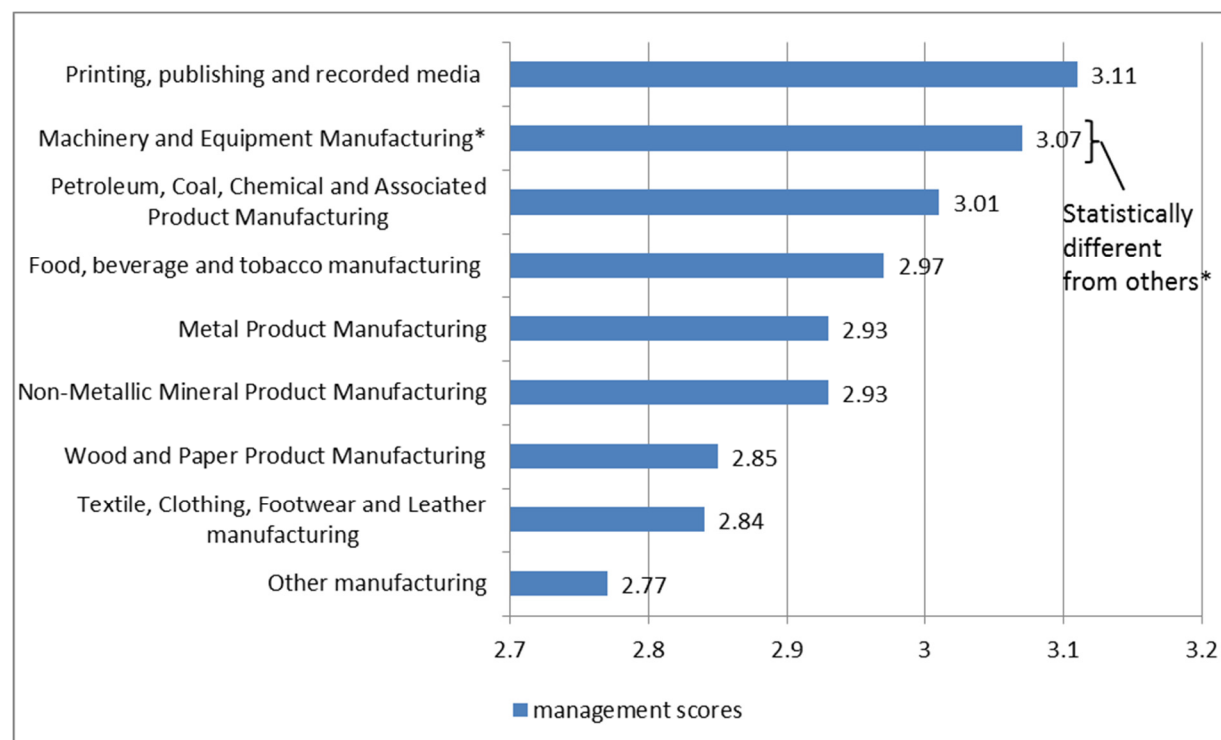
Statistically better		Queensland South Australia	Queensland South Australia	Queensland South Australia
Statistically Not different	Queensland South Australia New South Wales Victoria			
Statistically worse		New South Wales Victoria	New South Wales Victoria	New South Wales Victoria
	Operation	Performance	People	Overall

**Note:** Tasmania and Western Australia are not included due to negligible sample size; firm size 50 to 5000. Source: Australian management practices research; Tasmania and Western Australia are not included – sample size too small.

## Comparison of the F&B Sector Across ANZSIC Codes

The relative ranking of the overall management scores across ANZSIC manufacturing industry sectors was examined (see Figure 15). The results of this research show that the F&B Manufacturing sector is ranked fourth in overall management practice, yet lags behind Printing, Publishing and Recorded Media, Machinery and Equipment Manufacturing and Petroleum, Coal, Chemical and Associated Product Manufacturing. Despite this ordered ranking, the F&B Manufacturing sector was found not to be statistically different (worse) in overall management than the best performing industries - Printing, Publishing and Recorded Media and Machinery and Equipment Manufacturing. The Machinery and Equipment Manufacturing industry performs statistically better than other industries. For further information on the breakdown of industries mix involved in the study see Appendix A.

**Figure 15 - Overall management scores by industry**

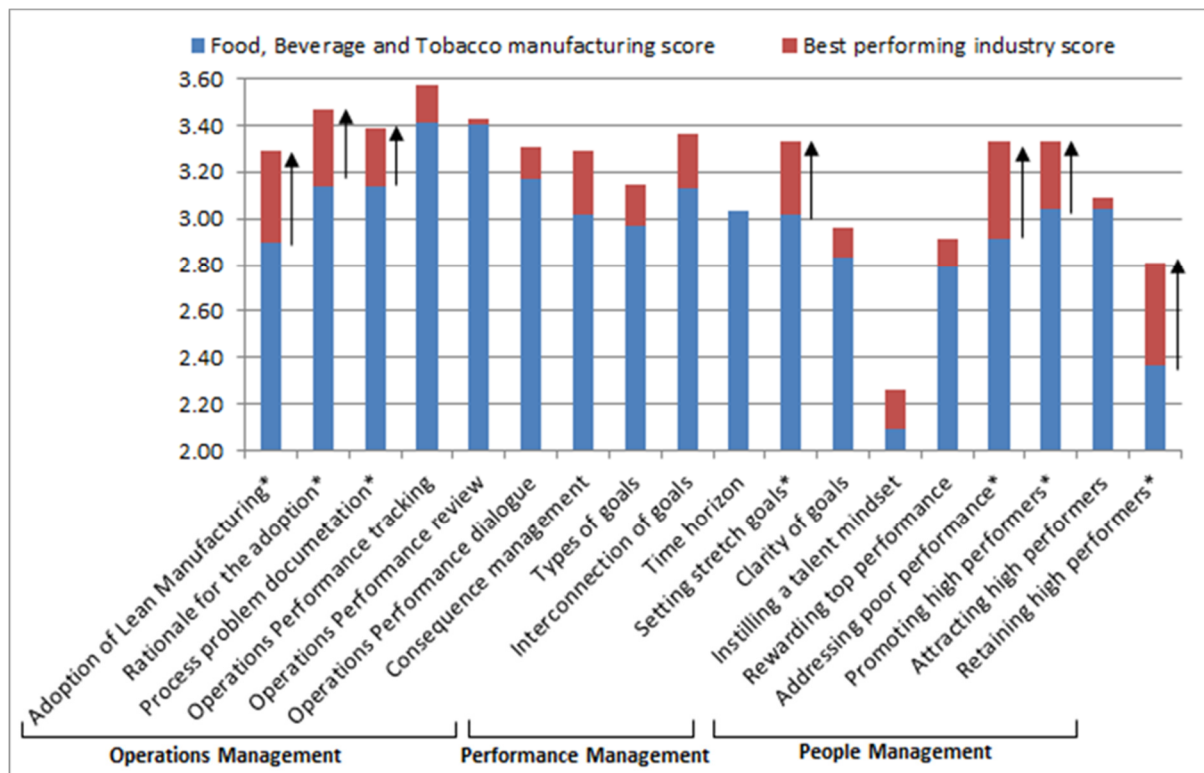


\*: Statistically significantly different from the rest of the sample. \*At the 10% significance level (Not different from Australian sample)

Source: Management Matters Dataset. Company size – 50 to 5,000. Note: While the absolute value of the average management score of Printing, Publishing and Recorded Media (ANZSIC code 24) is highest, rigorous statistical tests show that the difference in scores is not of statistical significance with the rest of the sample.

The comparative analysis of F&B Manufacturing companies with the best performing industry across eighteen specific dimensions was also undertaken. The findings of the research demonstrate that there is room for F&B manufacturing companies to improve management practices in the area of operations and people management and to close the gap with the best performing industry (Figure 16).

**Figure 16** - Gaps in Australian F&B Manufacturing management performance by each dimension when compared to best industry sectors



\*Australian score statistically different from the global best performing country's score – based on statistical analysis at the 10% significance level. \*At the Source: Management Matters Dataset. Firm size – 50 to 5000. Note: Canada is excluded from statistical analysis of individual questions as the firm-level data of Canada are not available.

### Key Findings:

Overall, performance and people management practices are seen to perform significantly better in large companies over medium companies; and in Queensland and South Australia over New South Wales and Victoria. Furthermore, while F&B manufacturing is not significantly worse than the leading industry across Australia, analysis of the 18 dimensions show there is still room for improvement particularly in operations and people management to minimise the gap

### Key Implications for F&B Sector

Focus should be given to the improvement of performance and people management in the worst performing states of New South Wales and Victoria in order to improve the overall strength of the Australian F&B sector

# Why do Australian Management Practices Vary?

## Management Practices vary in F&B sector

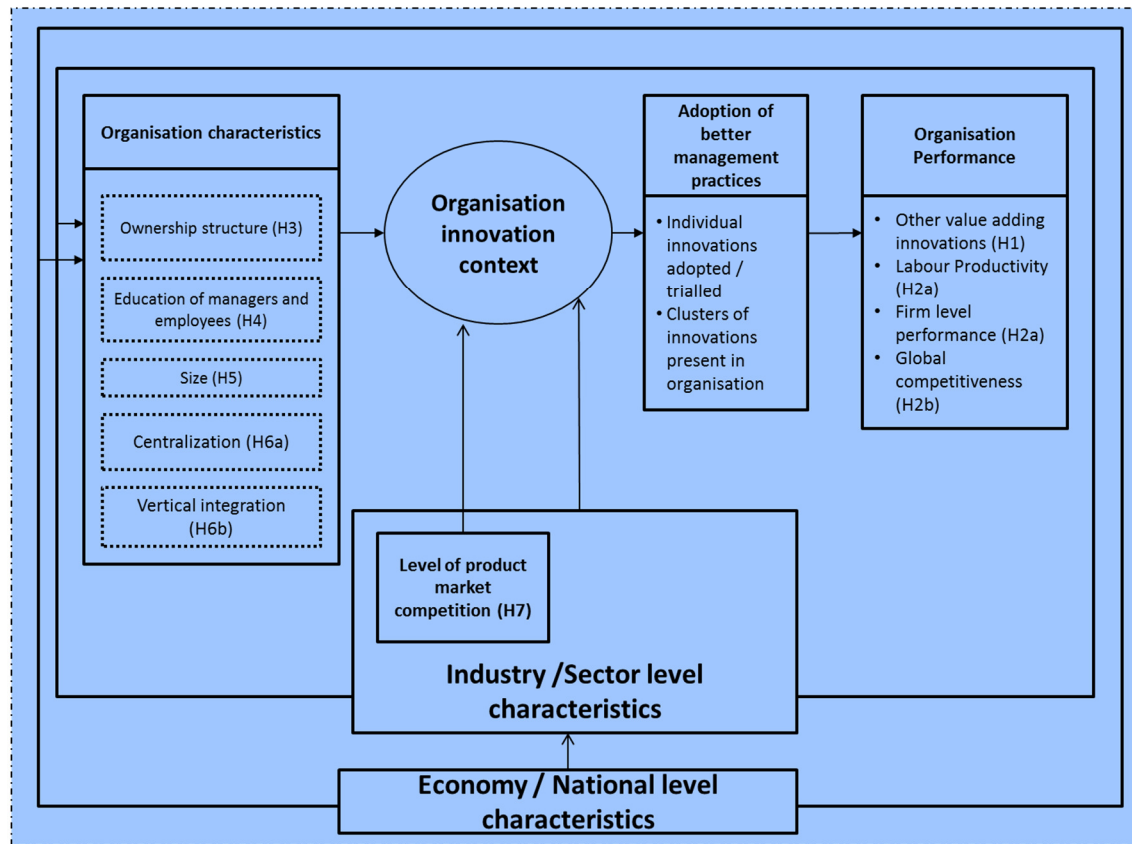
Having explored a number of comparisons of management practices scores in the F&B manufacturing sector, this report now turns to addressing factors which can predict the presence of better management in the Australian F&B sector. The explanatory power of various organisational characteristics were tested and determined to have no explanatory power, limited explanatory power, significant explanatory power or highest explanatory power. Following, key policy findings towards better management practices are outlined.

**In addition to increased productivity, companies which score higher on management practices also tend to be more innovative.**

## Innovation and Management Practices

In addition to increased productivity, companies which score higher on management practices also tend to be more innovative. In the Australian context, Agarwal et al (2014) found a positive and significant association between the level of innovation (measured using the number of patents) and the management score. They propose that organisations have an innovation context that enables and nurtures the trialling and adoption of more innovative management practices. Drawing on insights from the vast literature on the Innovation Diffusion theory, they proposed six key factors that support an organisation's innovation context. Figure 17 presents the associations hypothesised in Agarwal et al (2014). They find evidence consistent with all associations, with the exception of competition.

**Figure 17** - Organization characteristics, innovation context and innovation outcomes for Australian manufacturing firms



Source: Agarwal et al (2014)

Whilst this list of factors suggested by Agarwal et al (2014) is not exhaustive, it does beg the question: which of these factors are more robust in predicting the presence of better management in the Australian F&B sector? Table 3 presents test of association for the Australian F&B sector for each of the variables evaluated by Agarwal et al (2014). We also included union membership as organisations which are heavily unionised are often portrayed in public discourse as being less efficient, less productive and less innovative. As we have data on the percentage of employees belonging to a union, we are able to test this hypothesis. The R value provides an approximate level of the explanatory power of each variable tested. The results indicate that there are sizable differences in the ability between competing explanations, ranging from 'No explanatory power' in the case of the level of completion to 'Significant,' as in the case of the level of education. These differences are summarised in Table 3.

**Table 3** - Test of Association for the Food and Beverage manufacturing sector in Australia for organisational characteristics expected to explain the presence of better management

Organisational characteristics	Brief explanation	R value*	Finding
Diffused ownership structure (+)	Corporate ownership structures general have better governance, leading to better management.	3.4%	Positive and significant
Family owned firm (?)	On one hand, family owners have more skin in the game than corporate owners, and hence may invest in relatively better management practices. On the other hand, worse management practices may be tolerated due to family connectedness. In some cases new practices are not introduced into firms due to less variation in capability from recruitment from family networks.	0.1%	Negative, not significant
Family owned and CEO is a family member (?)	As above.	0.5%	Negative, not significant
MNC ownership (+)	Facilitates transfer of technology and knowledge between geographically dispersed units. As with corporate ownership, governance practices are often of higher quality.	14.7%	Positive and significant
Level of education of firm management (+)	Education supports the identification, acquisition and evaluation of better management practices.	20.3%	Positive and significant
Level of education of firm employees (+)	Education supports the identification, acquisition and evaluation of better management practices.	8.5%	Positive and significant
Firm size (number of employees) (+)	Larger firms often have more physical and human resources, and technical expertise. Also, more innovative firms grow larger.	13.4%	Positive and significant
Plant manager hiring autonomy (+)	Delegating decision making to lower levels in an organisation often allows those who are closer to organisation activity to implement more informed innovations and frees organisational participants who more efficiently trial innovations.	2.9%	Positive, not significant
Plant manager investment autonomy	As above.	9.2%	Positive and significant
Layers between CEO and shopfloor (+)	Larger and more complex organisations have been found to promote innovation in a variety of contexts.	8.2%	Positive and significant
Level of product market competition (number of competitors in market) (+)	Less innovative firms (i.e. poorly managed) are forced to adapt or exit the market.	0.4%	Negative, not significant
Union membership (-)	Organisations that are heavily unionised are often portrayed in public discourse as being less efficient, less productive, and less innovative.	2.7%	Positive, not significant
Combined model	Organisations that have a number of these characteristics are likely to be more innovative.	30.6 (adjusted R squared)	Adjusted R value

\* The R value can be interested at the level of explanatory power, where 10% would indicate the organisation characteristic explains 10% of the variance in management practices. Note: Please see Agarwal et al (2014) for a more detailed explanation

There are a number of notable and surprising findings that emerge from the evidence presented in Table 3. Table 4 provides a summary of these key findings. The factors that have the greatest explanatory power relate to education and scale. Organisations that are large, have MNC ownership and more educated employees have access to a greater variety of talent and seem to be better at identifying, acquiring and implementing better management practices. Furthermore, organisations which see the need to centralise decision-making and control perform significantly worse than those which decentralise.

**Organisations which see the need to centralise decision-making and control perform significantly worse than those which decentralise.**

Notably, two of the key policies that have been canvased in longstanding policy debates have relatively low explanatory power. First, whilst there is no denying the value of competition for weeding out poor performing organisations, we find that higher levels of competition are not associated with increased prevalence of value-adding management practices. This finding is consistent with those of Bloom et al (2013) discussed above, which found that competition did not effectively push poorly managed companies out of the market in a field experiment setting. Second, union membership is not associated with worse management. Whilst the association is not significant, it is positive and the variable explains significantly more than competition. These results beg the questions as to how and why these factors are associated, which can only be answered from research conducted using a different experiment design.

Despite the robustness of the above findings, there are a number of competing explanations which cannot be examined using the MM 2009 data set. For example, the role of firm champions<sup>4</sup>, informational explanations, the role of consultants, the effectiveness of alternative policy approaches (such as industrial vs. education reform), the role of different types of competition and other market structure characteristics.

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<sup>4</sup> Prior research has often found that the key reason an innovation is adopted is due to the presence of firm insiders whom champion the specific innovations.



**Table 4** - Comparison between different policy options as levers to improve management performance

No explanatory power	Limited explanatory power	Significant explanatory power	Highest explanatory power
< 1%	1% to 5%	5 to 10%	>10%
Family owned firm (?)	Union membership	Layers between CEO and shopfloor (+)	Firm size
Level of product market competition (?)	Plant manager hiring autonomy (+)	Level of education of firm employees (+)	MNC ownership (+)
Family owned and CEO is a family member (?)	Diffused ownership structure	Plant manager investment autonomy	Level of education of firm management

Note: The level of explanatory power is based on the R values reported in Table 3.

## Key Findings

Higher management practice scores have been linked to firms which display higher levels of innovation. Education and skills are important, not only for managers but across each level of the organisation, emphasising the importance of ongoing training and development for all employees. Ownership and autonomy are also weighty factors. Building scale in individual companies is critical, along with decentralised decision-making and control, allowing for greater flexibility and creativity. Things can be learnt from corporate and MNC organisations as they are generally better managed in comparison to smaller, family owned firms. A composite policy agenda to support innovation in an organisation context is probably the best approach, as many of these practices are well known, and many market participants have not adopted them; suggesting the presence of a type of market failure.

## Key Implications for the F&B Sector

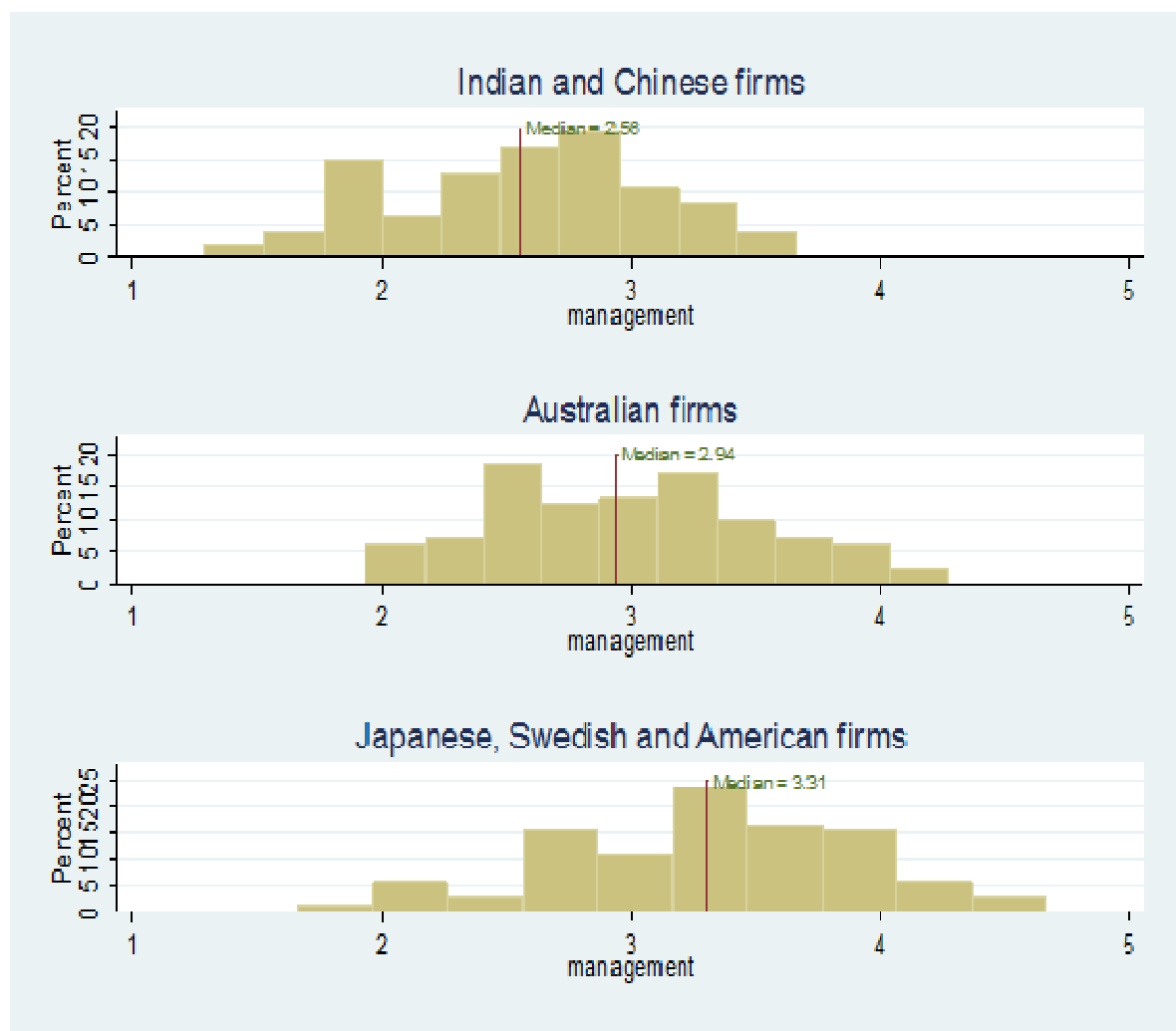
The results highlight the importance of education of management and employees towards achieving better management practices in the F&B sector. The findings identify sets of firms which can be supported to achieve better management, namely, those that are: smaller, low union membership, family owned, contain less educated employees and managers, and have a centralised structure.

# Additional Key Issues for the Australian F&B Sector

## Emerging economies and top leading economies pose a challenge

In overall performance management, Australian companies are doing better than Chinese and Indian companies (Figure 18), with a median overall management score of 2.94 compared to 2.56 for Indian and Chinese companies. However, when compared to Japanese, Swedish and American companies, those in Australia are doing worse than the best performers whose median is 3.31. This suggests that Australian companies have to improve their management practices and performance to align with top global performers.

**Figure 18** - Australia benchmarked with India, China and Japan, Sweden and US

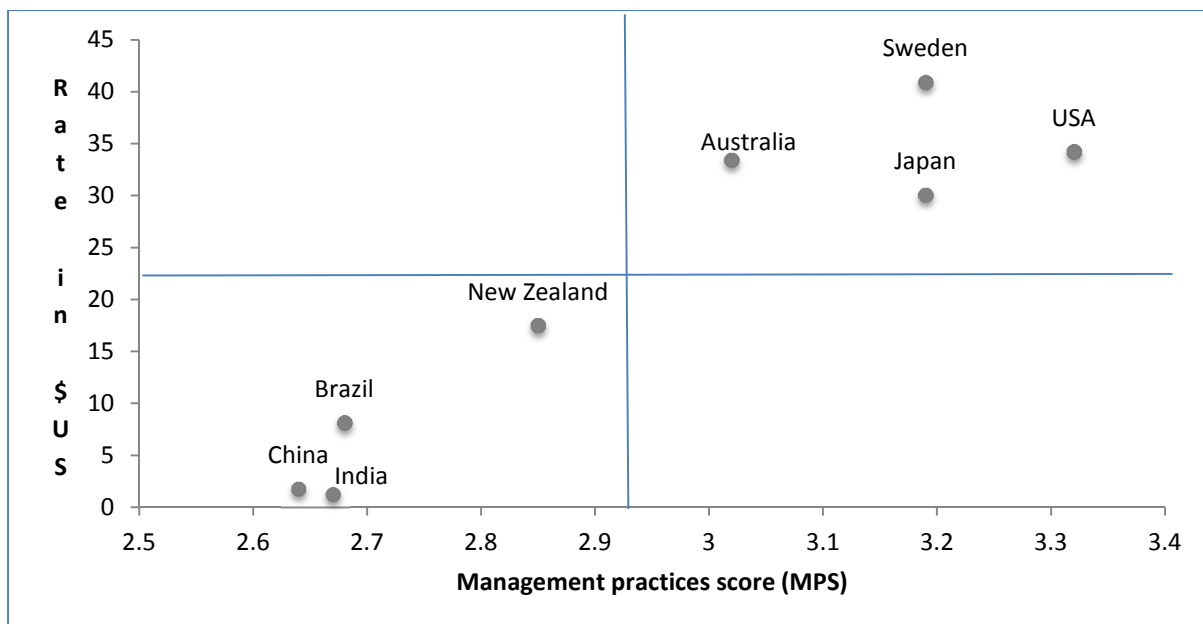


Source: Management Matters Dataset and WMS dataset

**The Australian manufacturing sector is stuck in the middle, with neither the low-wage cost base, nor the high-performance management practices.**

Figure 19 compares the average hourly wage for manufacturing workers to the overall manufacturing management practices score for eight countries. As argued by Agarwal, Bajada et al (2014), the Australian manufacturing sector is stuck in the middle, with neither the low-wage cost base, nor the high-performance management practices. They argue that should this situation continue, it is likely that the competitive position of the sector will continue to erode. It is worth noting that whilst a policy agenda that focuses on reducing wage pressure may result in some short-term gains in competitiveness, it is unlikely that such a strategy would be effective over the long term. It is believed that by investing in better management practices, technology and other innovations, relative productivity will increase, which would enable the sector to maintain a competitive position with wages at the level of other innovation-driven economies.

**Figure 19** - Plot of average hourly wage for manufacturing workers on management practices score



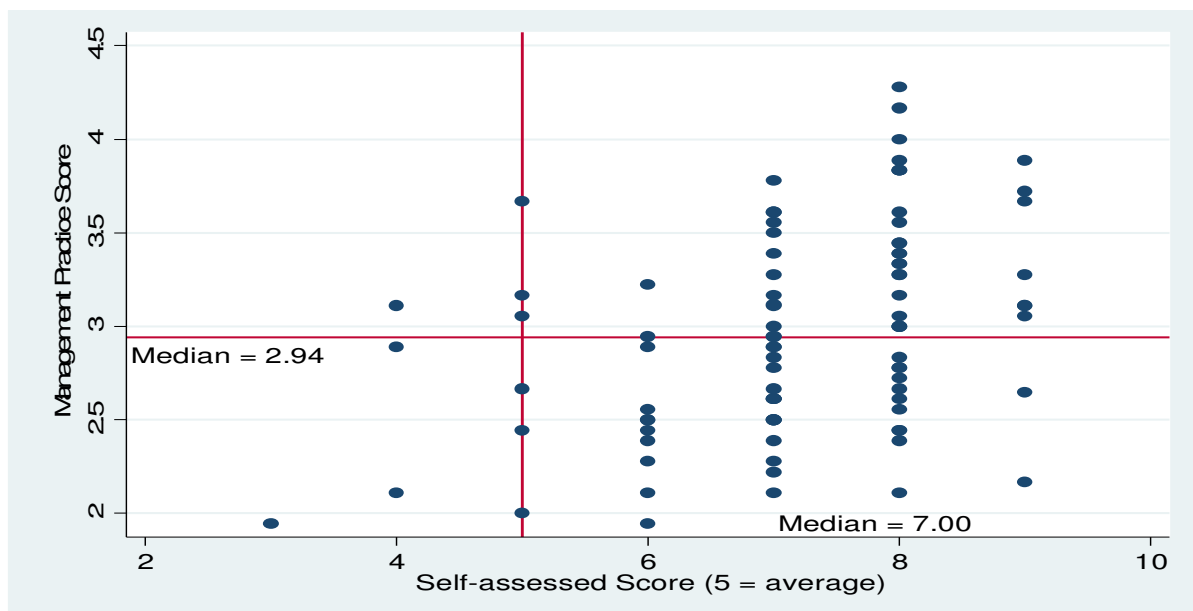
Source: Figure is sourced from Agarwal, Bajada, Brown and Green (2014, p. 274). Labour rate data is the average hourly rate for manufacturing workers in 2009, from the US Bureau of Labor Statistics [<http://www.bls.gov/fls/ichccindustry.htm>]; Source: MPS scores are sourced World Management Survey dataset [[http://worldmanagementsurvey.org/?page\\_id=183](http://worldmanagementsurvey.org/?page_id=183)]

## Management overrates their performance

A key finding in the Management Matters in Australia (2009) report was that many managers were oblivious to the current state of global best practice management. When asked to rate their company's performance in terms of overall management calibre, they generally over-scored their company's management ability. To reduce overt bias, managers were asked to exclude their own contribution to the company's management capability.

**When asked to rate their company's performance in terms of overall management calibre, they generally over-scored their company's management ability**

**Figure 20** – Scatter plot of management practices score and managers self-assessment of their organisations relative management quality



Source: Management Matters 2009 Dataset

Figure 20 presents a scatter plot of the management practices scores (estimated using the double-blind, double-scored method) and the self-assessed scores. The first striking observation is that managers systematically think their company is above average, with a median score of 7. Second, there is a large group of managers who scored below average compared to the rest of the cohort and who considered themselves to be above average, as indicated by the group in the bottom right quadrant. This phenomenon has been observed in the other countries where management capability has been benchmarked.

Manager over-confidence is a major barrier to unlocking the latent productivity that could be accessed by adopting better management practices. First, the subsets of managers who think

their company has above-average management capabilities are less likely to engage in benchmarking or similar activities to identify where management can be improved. Second, managers often have strong beliefs about the efficiency of a given practice. A key finding of the Bloom et al. (2013) field experiment was that in some organisations, it took significant effort to change these strong beliefs about the efficiency of a practice. In some cases, a consulting organisation needed to implement a given management practice in small scale pilot experiments on-site in order to demonstrate to factory owners that the practice would be beneficial. In other cases, it was sufficient to present the findings of other pilot projects and/or case studies. Figure 20 indicates that there is a set of managers in the Australian F&B sector who are also likely to need similar support to recognise shortfalls in their management strategy.

**Manager over-confidence is a major barrier to unlocking the latent productivity that could be accessed by adopting better management practices**

# Conclusion and Key Implications for the Australian F & B Sector

## Where to for Australian F&B companies?

There is increasing competition from international markets confronting the Australian Food and Beverage sector (including agri-business), which will only intensify in the future. At present, the sector has limited supply-chain capabilities in these developing markets that would allow it to compete effectively. The AWP (2013) recommended that ‘a successful transition will require strong industry leadership, supported by appropriate government policies and programs, including skills and workforce development. Employers must become more outwardly focused’. The results of this study highlight the gaps and urgent need to improve management practices across the sector to ensure not only its future viability but also the pathway for growth. The starting point of this study was to examine and compare the management performance of the F&B sector with similar sectors in other countries, including other Australian manufacturing sub-sectors and industries. The findings suggest that the Australian F&B sector needs to focus on improving the operations and people management skill capability to bridge the gap as a platform for developing strategies to ensure its long-term viability and contribution to Australian employment and productivity.

## Where to for government policy-making?

One of the key barriers to the widespread uptake of better management practices is informational, which is where policy makers can make a significant difference. Given that knowledge of best management practice is in the public domain, and hence accessible, the lack of adoption can be characterised as a type of market failure. There are at least four main ways policy makers could address the identified management skills gap.

- Support initiatives aimed directly at educating existing managers. Policy options range from providing incentives to support direct and/or indirect education strategies.
- Fund further targeted research to support organisational decision-makers in their deliberations as to which practices add the most value in terms of driving innovation and productivity.
- Use policy tools to support “train-the-trainer” types of strategies. Whilst we do not have readily accessible evidence confirming this, the need to address skills gaps is substantiated by the presence of vibrant consulting and professional education markets.
- In the spirit of a ‘rising tide lifts all boats’ strategy, provide training and leadership to the VET sector to support the broad-based uptake of education offerings.

The government has an important role to play in complementing the strategies undertaken by the F&B sector to be competitive in the future. Much of this rests on either co-funding initiatives or ensuring the appropriate government support (or subsidy) to improve the skills and knowledge of the F&B sector workforce, including leadership and management skill development at the senior levels through to the operational divisions of its workforce through TAFE and other relevant courses. AWPAs recommended in its 2013 report that the government should provide subsidies for workers to access Certificate II courses to boost skill capabilities necessary for the sector, including risk management and capabilities to 'translate research and development into business processes along the supply chain'.

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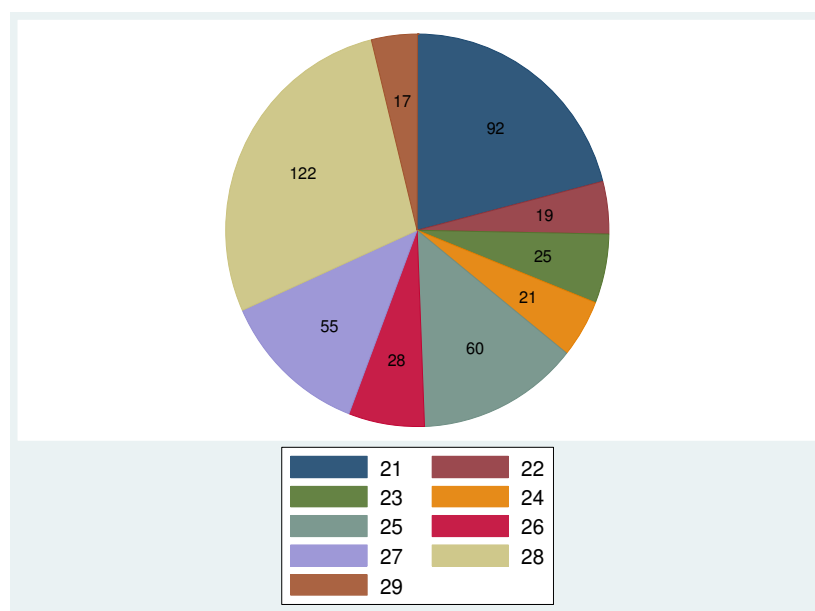
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# Appendix A

## Management Practices can be measured – Data, Sampling Frame and Research Method

Figure 4 shows the breakdown of the interviewed companies on the basis of the manufacturing sector ANZSIC codes 21–29. Almost a quarter of the interviewed companies are engaged in Machinery and Equipment Manufacturing (ANZSIC 28), followed by 20% in F&B (ANZSIC code 21). Approximately 14% of the companies belong to the Petroleum, Coal, Chemical Manufacturing Sector (ANZSIC 25) and another 13% to Metal Product Manufacturing.

**Figure 4 - Interviewed Companies by Industry**



**Notes:** The figures in the pie chart represent the number of companies interviewed by the various ANZSIC codes.

**Source:** Australian management practices research. ANZSIC code - 21: Food, Beverage and Tobacco Manufacturing; 22: Textile, Clothing, Footwear and Leather Manufacturing; 23: Wood and Paper Product Manufacturing; 24: Printing, Publishing and Recorded Media; 25: Petroleum, Coal, Chemical and Associated Product Manufacturing; 26: Non-Metallic Mineral Product Manufacturing; 27: Metal Product Manufacturing; 28: Machinery and Equipment Manufacturing; 29: Other Manufacturing.

## Data, Sampling Frame and Research Method

Data relating to the companies was sourced from the ORBIS and the Dun & Bradstreet databases. Subject to several criteria, including company size (50 to 5,000 employees) and plant size (more than 40 employees), the sample frame consisted of 3,464 companies. The

total number of companies interviewed was 439, out of which 92 companies were from the F&B sector ANZSIC code 21.

In order to authentically replicate the LSE method in Australia, the LSE team guided the local Australian team throughout the process. To ensure consistent standards and global comparability of results, the interviewers were trained in the interview method, focusing on three key aspects: i) scheduling and conducting interviews, ii) collecting accurate responses and iii) scoring the management practices.

A key challenge in surveys is to obtain unbiased responses to questions and hence minimise survey bias (Bloom, N. and Van Reenen, J. 2010). To achieve a satisfactory response rate, several techniques were used to reduce the bias of the respondent (the manager) and the interviewers (see Green et al, 2009; Agarwal; et al, 2014). The critical aspect of obtaining unbiased responses from companies can be attributed to the 'double-blind, double-scored' research method that formed the basis for all of the management interviews.

A total of 439 medium and large manufacturing companies in Australia were interviewed as part of the Australian research. For the ANZSIC code 21 (F&B sector), there were 92 companies sized 50 to 5,000+ and 82 companies sized 100 to 5,000, compatible with the LSE sample company sizes. The interviews were conducted in early 2009 from a central location in Sydney.

# Appendix B

## Managing for High Performance – Future Research Pathway

There are a number of important issues that this research project could not adequately address as a result of data limitations (small sample size) and the absence of other important variables (e.g. risk factors) from the dataset used. Although this research report highlights important lessons for the Australian food and beverage sector, the gaps and the next steps identified below need to be adequately evaluated before the food and beverage sector can develop a comprehensive strategy to ensure its future viability if it is to face head-on the looming competitive threat coming from overseas.

The gaps that require further analysis include a better understanding of:

- the approaches to innovation and risk in the F&B sector and how these compare with those of other manufacturing sectors in Australia;
- the differences in performance between small and large as well as family and corporate organisations; and
- the approaches that these different organisations have taken with regards to their own performance metrics.

Given that innovation is a continuous process that entails an interplay between values, principles and intellectual and human capital, the causes and consequences of different innovative managerial practices (best and worst practices) of companies undergoing transformational change need to be understood to make significant impact on the F&B sector's performance. This includes the fact that:

1. Changes in corporate performance is typically a function of: (a) company-initiated transformation programs, (b) changes to management practices, (c) external economic and environmental factors and (d) realized innovations to labour, capital, product, supply chain and services;
2. Transformation programs comprise both a transforming strategy and a transformation process; and
3. Transformation processes include changes to workplace behavior, culture and the overall management of the organization.

To address these (and other) issues, the next important step is to focus efforts on understanding the causes and consequences of different innovative managerial practices of companies undergoing transformational change with the specific aim to:

1. Obtain a snapshot of the company's business performance, taking into account their managerial practices, workplace culture and leadership as benchmarked against global best practice. This will give the necessary insights to help calibrate the

transformational programs, especially strategy and operationalizing transformational change. A company-wide risk management approach provides an effective lens for this assessment. Using a corporate risk management approach antecedents (including strategic options that were forgone – the opportunity costs) of strategy formulation for innovation are measured against resultant outcomes.

2. Assess the impact on business performance and innovation following the implementation of a transformational program. This will identify the impact on company performance following the implementation of a transformational program, including the realised innovations in labour, capital, product, supply chain and services. By relating this information with company-level performance data, the role of management practices in explaining the differences in business performance across companies may be evaluated.
3. Consider how the transformational program impacts management practices, taking into account factors such as workplace behaviour, culture and the management of the organisation.
4. Evaluate the network effects of innovation and transformational change among organisations, particularly the spill over effects of innovation across a sector and flow-on effects of this innovation for the domestic economy.

Equipped with an understanding of these important issues, the food and beverage sector can develop an effective strategy to grow and compete effectively on the world stage

Underpinning the four broad aims above, the research proposal's specific objectives are to:

- Benchmark 200 Australian CEOs/medium-sized companies (i.e. 20-200 employees as per the ABS definition) each year for four years with international best practice;
- Create a network of CEOs/companies to enable collaboration around innovation, business performance improvement and transformation;
- Arrange a face-to-face meeting/forum/conference each year with the cohort of 200 participating companies where findings of the benchmarking study at the industry and sector level are shared and network formation is promoted; and
- Provide a company-level benchmarking report to 200 participating companies each year that highlights the strengths and weaknesses when benchmarked against global best practice (optional - deliverable at extra cost charged to the company); and
- Conduct a longitudinal study for interested companies that have already participated in previous years and have undertaken transformational change programs to bring about innovation, business performance improvement and transformation, thus wishing to re-evaluate their performance and re-benchmark themselves against global best practice (optional - deliverable at extra cost charged to the company).

## RESEARCH METHOD

A longitudinal study across 200 Australian companies in the F&B sector each year for four years will be used to measure, quantify and evaluate their business performance outcomes and improvements. The globally recognised LSE-McKinsey-Stanford world management practices research method of double-blind, double-scoring<sup>5</sup> will be the basis of this study. The instrument to be used will be the LSE-McKinsey-Stanford scoring grid with additional dimensions that will be incorporated into the research design to measure intangible dimensions such as strategy and culture, management practices, sustainability performance and leadership.

The survey and subsequent analysis will build on the highly successful Stanford-LSE McKinsey world management practices research on manufacturing, hospitals and schools and will be adapted to suit the needs of this business performance survey for which we already have the capability (see references for examples of some selected results from the McKinsey research as well as Green et al, 2009; Green et al, 2010). Using the LSE-McKinsey-Stanford instrument, a scoring grid comprising of eighteen questions on operations management, talent/people management, target/performance management will be used (as per Bloom and Van Reenen 2007, 2010, Agarwal et al, 2012, Agarwal et al. 2014). Two additional dimensions on 'Capacity to innovate' and 'Business strategy' will be included.

This scoring grid was developed and tested by the Australian research team for Enterprise Connect, DIISR Canberra in 2011. Fourteen to sixteen additional questions will be added to the scoring grid to cover the remaining relevant dimensions of innovations studied in major respected and recognised research studies on leadership, change and entrepreneurial culture, antecedents of innovation including collaboration, accounting controls, virtuous positive organizational practices, innovative managerial practices, sustainability performance, new product/process/service development, dynamic capability building, and creation of knowledge and its management. Overall, the scoring grid will comprise approximately 40 dimensions along with its probing questions. Company-level financial and performance dataset will be collected through running a contemporaneous quantitative survey.

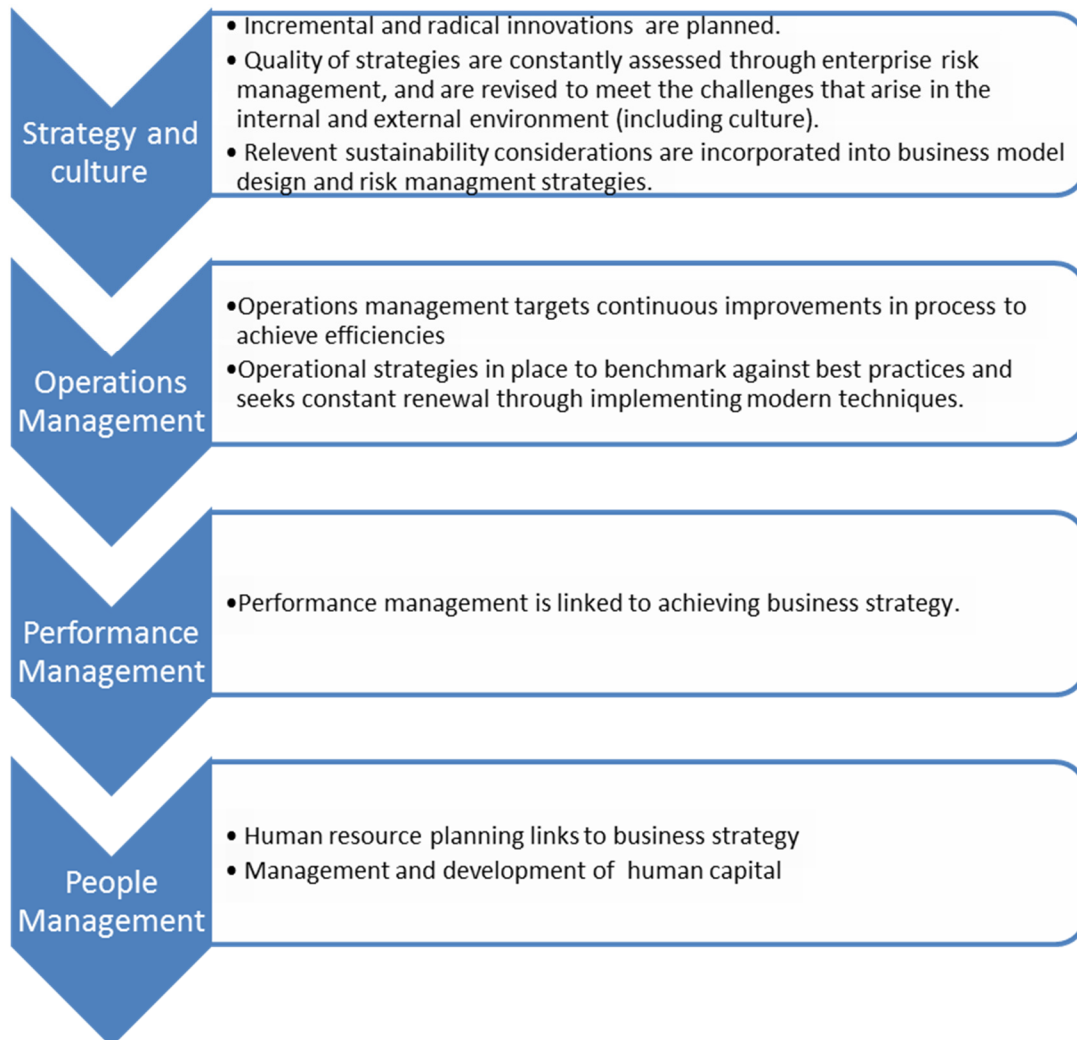
## RESEARCH FRAMEWORK AND PROCESS

There are five stages to the Hargraves project to be completed for the Australian F&B sector firms nationally:

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<sup>5</sup> A novel 'double blind, double scored' research method designed and tested by LSE/McKinsey (Bloom and Van Reenen, 2007) used for management practices research is used. To elaborate the 'double blind' nature of the interviews, while the managers were fully informed of the information to be discussed during the management interview, they were 'blind' to the fact that their responses were being scored; thus reducing response bias. At the same time, the interviewers were also 'blind' in that they were not privy to any background information on the firm, so as to eliminate any preconceived notions and scoring bias thereof. As for the 'double scored' portion, every interview while being run and scored by a main interviewer, was also 'doubled' by a silent listener, whose role was to 'double score' the responses.

1. **Stage 1** – Expand the LSE global benchmarking management practices scoring grid to include new dimensions, calibrating and training resources, as well as running the pilot across ten companies. The new dimensions include factors such as strategy and culture, operations management, people management and performance management.



2. **Stage 2** – Conduct the modified scoring grid using the double-blind, double-scoring method across 200 companies in the first year.
3. **Stage 3** – Write reports and present to forums at the end of first year.
4. **Stage 4** – Repeat Stages 2 & 3 three more times to conduct 600 additional interviews over next 3 years.
5. **Stage 5** – Optional for companies seeking individual reports benchmarked against global best practices as well as opting to conduct longitudinal studies in case companies have decided to assess the impact of transformational change programs.



## RESEARCH BUDGET ACROSS STAGES 1-5 OF THIS RESEARCH STUDY

Research Stage and Work Package	Proposed Budget	Other Comments
<b>Stage 1a:</b> Development of Survey Questionnaire to include all dimensions of management practices, strategy, culture and leadership	\$20K	Includes identifying economic and performance variables for Stage 2 data collection, and LSE based full-blown questionnaire/scoring grid for Stage 3 (60% of the instrument is current LSE scoring grid which is already benchmarked globally). A pilot study with at least 5 case studies will be conducted to assist in defining new dimensions to the scoring grid.
<b>Stage 1b:</b> Training and calibration of resources required for double-blind, double, scoring method	\$10K	3 to 4 PhD students to be hired on scholarship funded by this program (this ensures consistency of trained skills and capabilities of resources across the 4 years of the program); allows them to do their PhD in this area of expertise.
<b>Stage 1c:</b> Pilot run of the survey instrument across 10 firms to finalise the scoring grid to include new dimensions	\$10K	Finalising the full scoring grid, with probing questions finalised for the new dimensions
<b>Initial setup costs</b>	<b>\$40K</b>	<b>Timing – 4 months from start of project</b>
<b>Stage 2:</b> Conducting double-blind, double-scoring interviews and obtain economic and performance dataset for the 200 cohort of firms each year	\$1K per interview Eqvt \$200K	200 firms per year for extensive survey
<b>Stage 3:</b> Conducting in-depth analysis including econometric analysis	\$30\$	This analysis will be conducted for 200 participating firms at industry level as benchmarked against world's best practice
<b>Stage 3:</b> Report writing and presentation at annual forum	\$10K	Report and presentation of findings to the participating 200 firms
First year costs	\$240K	Timing – 1 year

**Stage 2 to Stage 3 will repeat each year over a period of 4 years**

<b>Stage 4:</b> 2 <sup>nd</sup> to 4 <sup>th</sup> year costs	240*3= \$720K	Timing – 3 years @ 240K each year
<b>Total project Cost over 4 years under this proposal</b>	<b>\$1M</b>	<b>Timing – 4.3 years</b>
<b>Stage 5:</b> Optional costs to Firms for seeking additional research/outcomes		
Firms wishing to secure their firm performance report highlighting their relative position including strengths and weaknesses as compared to global best practice	Approximately \$10K	This is an individual firm report that will provide in depth knowledge around firms competencies as compared to global best practice. This will allow firms to instigate transformation programs to allow them to become global leaders in their sector and to gain global competitive advantage. This may require additional interviews per firm, costs to increase based on additional interviews conducted.
Firms willing to do a longitudinal study after they have had an initial study done post implementation of a change and transformation program– a minimum gap of 1 year	Approximately \$20K	This is an indicative cost and can vary. This depends on the extent of transformation change program implemented by the firm requiring changes to the scoring grid. This longitudinal study will provide insights on the effect of changes implemented as a result of the transformation program

**MANAGEMENT OF THIS RESEARCH STUDY**

**Project Governance:** The project will be conducted at the Centre for Management and Organisation Studies (CMOS), which is a multidisciplinary research group of 27 core members, with dedicated facilities and full-time management staff. The Centre has developed a strong reputation for meaningful and effective interactions with industry, collaborating with government and private industry in Australia and internationally to carry out and disseminate research. CMOS researchers are well represented in leading academic journals and have a strong track record in attracting funding for research. UTS scored 4/5 for the research field 1503 (Business and Management) in 2010 and 2012 and CMOS members, were the main contributors to this, placing UTS among the top Australian institutions in this area and above world standards. The research will be conducted within UTS's Organisational Practices Research Program in collaboration with Hargraves and partnering stakeholders. The team will combine the disciplines (Organisational theory, Organisational Behaviour, Strategy, HRM, Operations Management and Accounting), methodological skills (qualitative and quantitative) and industry connections necessary for success (Hargraves existing project linkages – Printing and Food and Beverage).

**Project lead, Chief Investigators and Advisors:** The team will be composed of four Chief Investigators with Prof Roy Green and Dr Renu Agarwal as the Lead Chief Investigators, and Dr Paul Brown and Associate Prof Chris Bajada as co-Chief Investigators, and Dr John Chelliah, Dr Prabhu Sivabalan and Dr Ace Simpson as Associate Investigators. Prof Stewart Clegg and Prof Emmanuel Josserand will be Senior Advisors. Prof Nick Bloom of Stanford and Prof John

van Reenan of London School of Economics will again provide advice on the design and implementation of the project on a per-needs basis.

**Resourcing the Project:** As calibration and skilling of interviewers is key for the duration of the project, UTS believes that the best way to manage this research study would be have to a PhD program where three to four PhD students are hired on an annual salary of approximately 45K pa tax free (to be confirmed), who can be fully focussed on this research project. This approach provides several advantages. Firstly, these resources will be trained and calibrated once and will provide continuity throughout the lifecycle of this project. At the same time they will conduct their doctoral research across relevant research topics pertinent to this research. Milestone payments can be made in such a way that their scholarships are paid on time (TBA).

**Business and Industry Impact of this research:** Policy makers, businesses and managers will be able to take holistic approaches of transforming their businesses through business model innovation. Only few companies have the deep, enduring capability for innovation and the ability to transform, as such turning rhetoric into reality and understanding the underpinning causes of why some companies' business performance is better than others when implementing innovational change. The research findings and insights will foster the development of organisational and managerial capabilities required to identify opportunities, generate innovative capacity as well as sustain and advance in the more dynamic, globalised, service and knowledge-based economies of the future.

**Academic Impact of this research:** Using an innovative double-blind survey method<sup>6</sup> will enable us to build on the academic success of the management practices research by LSE/McKinsey/Stanford to produce a series of top-journal papers on the causes and consequence of different innovative practices of companies undergoing transformational change. UTS will have full access to the data obtained for analysis and conducting longitudinal study. The research will endeavour to answer industry-pertinent research questions, individual company specific questions and highlight policy implications, especially those applicable to the Australian F&B sector, and that UTS researchers be allowed to publish in top tier journals and/or present at industry/government forums, workshops or conferences. Ethics approval as per UTS guidelines shall be sought to enable the use of data collected for academic research, classroom study and academic publications.

**Research capability building, training and its supervision:** Once the survey data is fully collected and cleaned, the data (anonymized) will be made available for other researchers to use (same as the WMS dataset). We will also provide the full survey material, training guides and software to other researchers – *Train the Trainer* model.

**Optional Deliverables beyond what is already included above:** For optional deliverables at extra cost to be borne by the participating companies, as we understand, the sample

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<sup>6</sup> Details in "Measuring and explaining management practices across firms and countries", Quarterly Journal of Economics, November 2007, pp. 1351-1409.

companies are already using the Osterwalder and Pigneur Business Model Canvas (2009), as such the value added resulting from this management intervention will be examined using control groups. As such, data for the strategic framework for managing the stages of innovation, from sourcing and developing ideas, implementing proposed innovations and capturing the successes and failures of these changes leading to its association to business performance will be quantified through the longitudinal study. An innovation strategic framework (including factors such as internal policies, training, incentives, resource allocation, antecedents of innovation, best managerial practices and sustainable business model innovation) for transformation to a more effective organisation will be identified.