

Improving Supply Chain Performance of the Australian Beef Enterprises

Dr. Ferry Jie*

School of Management, Faculty of Business, University of Technology, Sydney

Email: Ferry.Jie-1@uts.edu.au

Prof. Kevin A. Parton

School of Marketing and Management, Charles Sturt University, Australia

Email: kparton@csu.edu.au

Dr. Roger Jenkins

School of Management, University of Technology Sydney, Australia

Email: Roger.Jenkins@uts.edu.au

Mr. Rodney Cox

School of Agriculture and Wine Sciences, Charles Sturt University, Australia

Email: rocox@csu.edu.au

Preferred Stream: Technology, Quality and Operations Management

Profile:

Ferry Jie is a Lecturer at School of Management, Faculty of Business, University of Technology, Sydney. His research project is concerned with Australian beef supply chain management. The project has been funded by the Peter Baillieu Memorial Agribusiness Grant.

His research interests are Operations Management, Supply Chain Management, Quality Management, Production Planning and Inventory Control and Operations Research.

He completed his bachelor and master degrees in Industrial Engineering. His bachelor thesis was on Production Planning and his master degree thesis was about Quality Function Deployment (QFD). In addition, he completed his doctorate degree at the University of Sydney. His PhD thesis is about the supply chain analysis of the Australian beef enterprises.

He has been teaching at two universities in Australia (UTS and USYD) since 2003.

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Abstract:

The significant overall problem for performance of the Australian beef supply chain was unskilled and inexperienced staff or personnel. Based on the results of the research, the suggested solutions are to provide training, knowledge and skills development, to integrate training methods with innovation and technology diffusion, to select and hire higher skilled migrants (outsourcing), to expand the group training provisions across Australia, to have deeper and richer relationships between industry, vocational education and training and higher education sectors, and to have better targeted recruitment.

Keywords: Australian beef supply chain.

INTRODUCTION

Generally, supply chain management is the linking of suppliers, manufacturing, distribution and customers, in which raw materials run from suppliers to manufacturers who assemble them into finished products and organise delivery into the hands of customers. Integrated supply chain management gives many advantages for companies, including improved delivery performance, reduction of lead time, and reduction of inventory, improved flexibility, responsiveness, efficiency and improved asset usage. This research focused on the Australian beef supply chain. This is the chain or sequence of all activities from the cattle breeding property to domestic or overseas consumers.

The Australian meat industry is an important industry as the fourth highest commodity export earner. The inclusion of overseas customers (over 100 countries around the world) is necessary given that Australia typically exports about 65 percent of its production. The value of the production of the Australian red meat industry has increased by \$2.4 billion in the last five years to reach around \$8.1 billion in 2007. In addition, the Australian red meat industry provides employment for more than 50,000 employees (Commonwealth of Australia, 2006).

The overall issue examined in the research was: What are the major difficulties arising when implementing supply chain management in the Australian beef industry?

AUSTRALIAN BEEF SUPPLY CHAIN FRAMEWORK

An Australian beef supply chain framework is shown in Figure 1. It has four levels: cattle production, beef processing, beef retailing/wholesaling and final consumer. Within this,

significant processes include (Peterson et al., 2000) transport (transport specification, quality systems and price), product storage (storage specifications, quality systems, storage management practices), preparation and packaging (grading and packaging standards (such as AUS MEAT language specifications), quality systems and receival standards and procedures), and market access (statutory export regulations, and market access issues, quarantine).

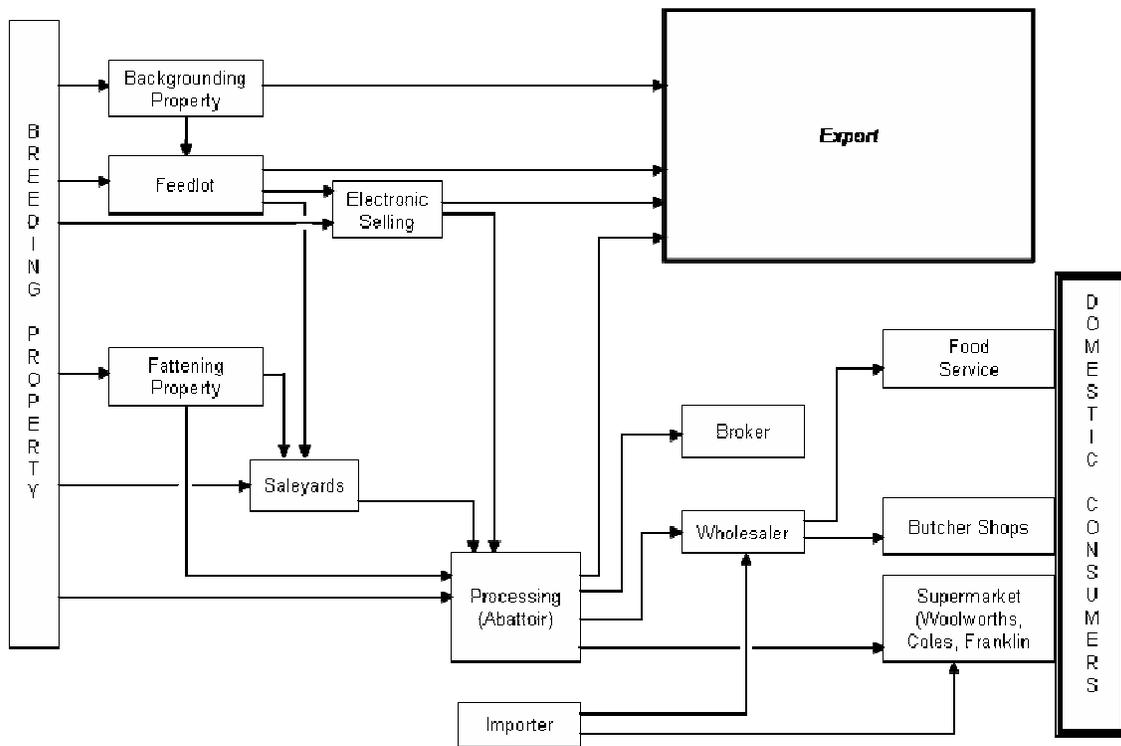


Figure 1. Australian beef supply chain framework

There are two types of integrated supply chains in the Australian beef enterprises. First, fully integrated supply chains which have cattle moving from feedlot/farms to processors who transform them into beef products and organise delivery into the hands of end customers. Large retail beef enterprises such as Woolworths and Coles have fully integrated supply chains. Second, partially integrated supply chains have supply chain activities only from slaughtering to end

customers or from producing to slaughtering. Small and medium beef enterprises mainly contribute to these partially integrated supply chains.

METHOD

A supply chain management survey for the Australian beef industry was conducted by distributing a mail questionnaire to beef producers, processors and retailers/wholesalers. The survey asked participants in the industry to express their views on various aspects of the supply chain. The effective response rate was 23%.

The results of the survey are reported in detail in Jie (2008). They indicated that the first concern when managing beef supply chains is unskilled and inexperienced personnel (Mode = 4 – Significant Problem). Moreover, other problems (shipping error, shipping delay and quality problems, government policy, high inventory and variability of customer demand) did not get as much attention from respondents. This suggested that the current project should give them lower priority.

As a consequence, the focus of the research became a review of potential methods of mitigating these skill shortages.

RESULTS AND DISCUSSION

1. Training, knowledge and skills development

Figure 2 shows the educational profile for the Agriculture, Forestry and Fishing industries. There is a high proportion of workers without post-school qualifications (60 percent). Many of the

skills required for this sector are probably learnt on-the-job rather than through more formal training, knowledge and skills development in TAFE, colleges or higher education providers (Workplace Australia, 2007). However, there are also many employees who could benefit from additional formal training.

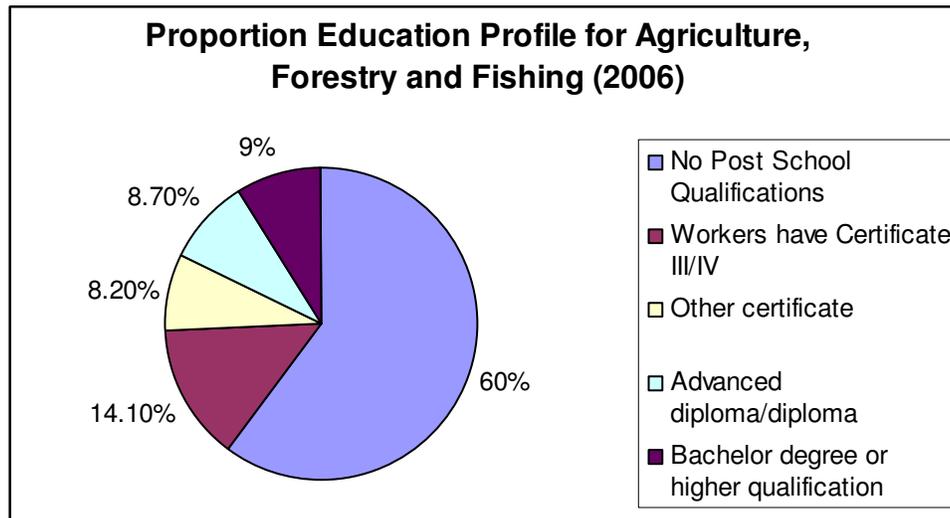


Figure 2. Proportion Education Profile for Agriculture, Forestry and Fishing in 2006 (ABS, 2006)

The Australian beef industry should do more in tactical or managerial approaches to enhance the skills of existing staff in order to get “*World class skills for world class industries*” (Australian Industry Group, 2004, p.3). The main managerial approach for the Australian beef industry to enhance training, knowledge and skills development is to increase industry commitment to these areas and place a stronger emphasis on employability skills (generic skills and capabilities or key competencies) for the jobs and workplace functions from entry level through to middle management (meat processing sectors as well as farmers, and livestock occupations). DEST has identified eight employability skills (generic skills and capabilities): communication; teamwork;

problem solving; initiative and enterprise; planning and organizing; self-management; learning and technology (DEST, 2002).

Another way to increase beef industry commitment to training, knowledge and skills development programs is by enhancing payment incentives to employers, butchers and slaughterers, apprentices and individuals (Australian Industry Group, 2004).

There are government incentives for employing trainees. The purpose is to make training more accessible and affordable. The Federal Minister for Vocation and Further Education stated that *“The Australian Government has funded a range of incentives to help address Australia’s skills shortage, and will increase the Government’s commitment to skills training to \$2.9 billion a year”* (DEST, 2007, p.1). The Commonwealth Government provides a range of employer incentives to encourage employers to offer the kinds of employment-related training opportunities that will encourage people to acquire, complete and expand their working skills to commence an industry-based career.

2. Integrating training methods to ensure innovation and technology diffusion

Current research (Kondinin Group, DPI&F and MLA) has been identifying technology that may reduce the labour problems in the Northern Beef Industry (DPI&F 2006). Due to rising labour costs, difficulties in recruiting and keeping staff in rural areas, Mr. Zeller from DPI&F in Queensland commented that the need for remote management technology may cut labour requirements (DPI&F 2006). Several remote management technologies have been developed and used in Australia to reduce the labour problems (DPI&F, 2006):

- *"Industry adoption of radio frequency identification technology for the National Livestock Identification System (NLIS) means other opportunities are feasible, such as automatic drafting and condition monitoring.*
- *Examples of potential labour savings are using unmanned aerial vehicles (UAVs) fitted with GPS and infrared cameras to check and report on the levels of dams and water holes, or using UAVs for mustering.*
- *DPI&F has shown that low-cost, high resolution images of crops can predict grain protein levels using digital cameras and remote-controlled UAVs.*
- *Using computer technology to monitor tractor performance" (DPI&F, 2006).*

With the remote management technologies applied to the Australia beef industry, firms need to integrate training methods to ensure innovation and remote management technology diffusion. Departments of Primary Industries in every state level, MINTRAC, Agri-food Industry Councils and higher education providers have similar programs.

3. Skilled migration

The shortage of skilled labour is considered by many Australian beef enterprises to be the greatest immediate challenge (Australian Meat Industry Council, 2006). A short-term solution is for the Australian beef industry to import higher skilled workers from overseas under what is called a Temporary Business (Long Stay) visa (Subclass 457), commonly called a "457 visa". The main criterion for the Australian beef industry to hire higher skilled workers from overseas is the firm needs to be the sponsor of the skilled worker and this may bring with it a number of regulations

such as medical coverage, training in the English language and assisting the worker to settle into the community.

4. Group training provisions

Previous research on improving skills of existing staff in Agriculture sectors is model of collaborations and partnerships between clients and providers of education and training or other learning activities. Six categories of models of partnership arrangements are identified (Kilpatrick *et al.* 2001): Client-provider partnership, Broker-client-provider partnership, Researcher-industry-provider partnership, Industry-provider partnership, Government-industry-provider partnership, Provider-provider partnership (and government).

Currently, there are not many meat industry courses (Cert. I in Meat Processing to Advanced Diploma of Meat Processing) across Australia. After collecting and analysing the data and information from the Australian Job Search website (Australian Jobsearch, 2007), Table 1 shows the number of meat processing courses from Certificate I Meat Processing to Advanced Diploma of Meat Processing by state. It is confirmed that WA, NT and ACT have the lowest number of meat processing courses. In addition, the courses are concentrated at lower levels. This may partly be the result of the tyranny of distance across rural districts preventing the accumulation of a critical mass of students.

Table 1. Number of Meat Processing Courses from Cert. I to Advanced Diploma of Meat Processing by state level in Australia

No	Course name	WA	VIC	TAS	ACT	NSW	NT	QLD	SA	TOTAL
1	Adv Dip of Meat processing	0	0	0	0	0	0	0	1	1
2	Dip of Meat Processing	0	2	0	0	2	0	1	3	8
3	Cert IV in Meat Processing-General	0	2	0	0	2	0	1	3	8
4	Cert IV in Meat Processing-Leadership	0	3	0	0	3	0	2	2	10
5	Cert IV in Meat Processing-QA	1	3	0	0	3	0	3	3	13
6	Cert III in Meat Processing-Boning	1	5	1	0	3	0	9	2	21
7	Cert III in Meat Processing-Food Services	0	2	1	1	3	0	1	2	10
8	Cert III in Meat Processing-General	0	2	1	0	2	0	2	3	10
9	Cert III in Meat Processing-Meat Retailing	1	2	1	1	5	1	10	3	24
10	Cert III in Meat Processing-Rendering	0	3	1	0	1	0	3	3	11
11	Cert III in Meat Processing-Slaughtering	0	1	1	0	1	0	2	3	8
12	Cert III in Meat Processing-Small Goods	0	4	1	0	3	0	9	3	20
13	Cert III in Meat Processing-Boning	0	4	1	0	1	0	1	3	10
14	Cert I in Meat Processing- Meat Retailing	0	1	1	0	2	0	2	3	9
15	Cert I in Meat Processing-Smallgoods	0	4	1	0	0	0	0	2	7
16	Cert II in Meat Processing-Abattoirs	2	5	1	0	10	0	9	2	29
17	Cert II in Meat Processing-Food Services	0	2	1	1	2	0	8	1	15
18	Cert II in Meat Processing-Meat Retailing	0	2	1	1	5	0	9	2	20
19	Cert II in Meat Processing-Smallgoods	0	4	1	0	1	0	1	3	10
20	Participate in OH&S Risk Control Process	0	0	1	0	0	0	0	0	1
21	Smallgoods Production	0	0	0	0	2	0	0	0	2
	TOTAL	5	51	15	4	51	1	73	47	247

MINTRAC is a company, owned by the Meat Industry, which supports the professional development of meat industry personnel by providing training and skills development programs. The main purpose of this training provider is to improve the skills of workers in the red meat industry (including processing (abattoirs and boning rooms), butchers, supervisors, senior stock handlers, livestock managers, small-goods and meat retailing) through the provision of recognised and accredited training from entry level through to senior management (MINTRAC, 2007). MINTRAC works together with the meat industry to provide the following services (MINTRAC, 2007): the development and review of National Qualifications and training frameworks (including National Training Packages); the development of training and assessment materials to support training packages (including management and continuous improvement of HACCP based QA

systems and animal welfare); the implementation of training or workshops in the industry (for example, to assist key quality assurance staff in beef enterprises to develop appropriate measurement tools); to demonstrate product/process conformity; to gauge the level of customer satisfaction or dissatisfaction; continually to improve quality system effectiveness; and the representation of meat industry training interests at a State and Federal level.

There are several extension courses for cattle/livestock producers (Kilpatrick and Millar, 2006). Several extension courses are delivered by RIST, DPI Victoria or at various other venues. Courses cover Prograze, beef nutrition, beef herd health (managing a productive healthy herd), carving up the meat pie (marketing), breeders for profit by improving cow selection, beef marketing by increased number of cattle meeting target market specifications, effective breeding programs, and beef cheque (grazing management, skills to increase profitability) (Kilpatrick and Millar, 2006).

While these are all useful activities, the information and analysis based on our survey indicate that an expansion of group training provisions across Australia is appropriate. The Vocational Education and Training (VET) sector needs to provide skills and knowledge for work, enhance employability and assist learning throughout life. In addition, VET needs to have links for university study options, which would provide up to six levels of nationally recognised qualifications in most industries. The VET system's involvement with industry is multi-level. VET assumes there will be workplace learning and training with industry supervisors. The limited amount of previous training means that it is often difficult to find enough supervisors.

5. The relationship between industry, VET and higher education sectors

Several objectives of the establishment of deeper and richer relationships between meat processors, smallgoods manufacturers, beef retailers/wholesalers and vocational education and training and higher education sectors are:

- Meat processors, smallgoods manufacturers and meat retailers are able to provide information about what are essential present and future skills and knowledge requirements in the industry, so training and education providers in Australia can incorporate those requirements by providing the appropriate training arrangements to meet those needs.
- Training and education providers may develop and implement strategies to increase opportunities for quality training in the industry.
- To seek funding for training activities from State Training Authorities , DEST, Agri-Food Industry Skills Training Council, Registered Training Organisations and New Apprenticeship Centres.

An example of a deeper and richer relationship between meat industry training and skills development organisations involves MINTRAC which frequently works in partnership with Registered Training Organisations to facilitate the delivery of high priority accredited training courses, or to introduce new models of delivery or resources (MINTRAC, 2007). Companies or individuals seeking to undertake accredited training related to national meat industry qualifications will need to go to a Registered Training Organisation (RTO). RTOs may access a wide range of support services from MINTRAC including (MINTRAC, 2007):

- advice on industry models for the delivery and assessment of the Certificates in Meat Processing,

- assistance with negotiations with meat companies and the implementation of training,
- training and assessment materials to support the delivery of the Certificates in Meat Processing,
- information on State and Federal Government funding and incentives for employers and RTOs,
- support and advice in their negotiations with the State Training Authorities,
- provision of workshops and support for their trainers to discuss and resolve issues arising from the delivery of the Certificates in Meat Processing, and
- referrals from employers who are interested in training.

A second example is Meat Livestock Australia (MLA) which is working together with a number of education providers for course material development, final-year projects and specialist research and development roles relevant to the red meat industry. In addition, MLA helps the meat industries to develop relationships with their local education providers, which often have industry partnership programs.

6. Better targeted recruitment

Another way that the Australian beef industry can obtain essential skills is through better targeted recruitment of butchers, apprentice butchers, slaughterers, apprentice slaughterpersons, meat processors, smallgoods makers and apprentice smallgoods makers. They need skills level such as an AQF Certificate III Meat Processing Course or higher qualification (Australian Jobsearch, 2007). In some instances relevant experience is required in addition to the formal qualification.

In cattle production, the recruitment strategy should target beef cattle farm managers, with a bachelor degree or higher qualification or at least 5-years relevant experience. In some instances relevant experience is required in addition to the formal qualification (Australian Jobsearch, 2007). Also self-employed farmers should be encouraged to attain these education levels.

CONCLUSIONS AND FURTHER RECOMMENDATION

Conclusions

Analysis of beef supply chains in Australia revealed that the critical issue affecting their operation is a lack of an appropriately skilled workforce. This led to a review of six areas of skills development that are currently available. Some are still at an embryonic stage, and all could be enhanced in the various ways indicated in our review.

Further Recommendation

As a follow-up to the research described here, further detail analysis could be completed of each of the proposals discussed above. For example, the general impression gained from our survey work was that improvements in group training would be particularly useful to the industry. However, this impression remains in the realm of hypothesis to be examined in future research. In addition further research needs to be done to delve more deeply and discover solutions for other supply chain concerns (for instance government regulation and variable customer demand issues).

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