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# THE “WISE” SUPPLY CHAIN: KNOWLEDGE AS A COMPONENT OF ITS SUCCESS

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## ABSTRACT

Enterprises enter supply chains to improve profitability through product development that is responsive to consumer demands. Increasing market share and maintaining a competitive product depends on the ability of each unit in the chain to apply knowledge innovatively. The key to innovation is the application of explicit and implicit knowledge of the people within the organisations throughout the chain. With improving technology and a supportive learning environment, enterprises in the rangelands can add value by utilising the collective wisdom of the people in the organisation.

## INTRODUCTION

Knowledge is the competitive advantage in a supply chain – it not only transforms the production but also the ability to foresee and manage complexity and change. The challenge is to create a value chain where people have the necessary skills to add value by developing, acquiring, exploring, sharing and applying knowledge – not just to resolve issues but to be innovative. Knowledge acquisition and application within the supply chain underpin the intellectual capital of the chain and its ability to ensure a competitive product and increased profit margin. Each component in the supply chain adds value for the client, derived from its specialist knowledge, to the final product. The quality and application of the knowledge throughout the chain has a direct impact on the quality and competitiveness of the product. It is a ‘wise’ supply chain that values the thinking capacity of its people. (Value chains are after all, relationships built on co-operation).

The ‘value’ in a value chain resides within the flow of thinking processes throughout the chain. The power to drive innovation within the chain lays within the people rather than the technology. The degree of value placed upon the acquisition and application of knowledge underlies the chain’s ability to foresee and manage complexity and change. A wise supply chain engenders a climate of knowledge growth and acquisition as part of its business strategy realising that the decision making capacity of the people within the chain creates the value for the client.

Rangelands enterprises participating in supply chains are challenged by isolation and the informal nature of the learning which takes place within the enterprises. Building a supportive learning environment increases the knowledge capacity of an enterprise as well as being connected and switched into the issues and trends impacting on profit margins.

## WHAT IS KNOWLEDGE?

It is indeed a wise person who knows what he does not know but it is even a wiser person who knows how to access information and develop this into knowledge. Knowledge starts its life as data, unrelated facts, that have little value on their own. As data are combined and placed in a context, it becomes information. Information becomes knowledge through critical and creative thought processes. These processes generate meaning for the user that is verifiable. When insight is added to the accumulating knowledge then a person has moved to being educated, i.e., they have an understanding of how they know. Wisdom grows from the process of education where philosophical insight and moral judgements can be made through the skills of thinking, evaluation and decision making, and self-actualisation is evident. The learning cycle is continuous, each layer building upon another (Figure 1).

Where does the wisdom reside in the supply chain? It resides in the people, the quality of the relationships that are formed across the chain and the application of shared knowledge. The chain is a

sum of all the parts and co-operative exchanges of information and knowledge across it ensures strategies and knowledge are aligned to its goals (Furlong 2001). Stakeholders within the chain have increased commitment to the strategic goals when they are knowledgeable about their contribution and when the culture encourages their contribution to knowledge growth. “The broader access members get to the meaning-making (knowledge) activities of the organisation, the better are their chances of increasing systemic wisdom” (Pór 2000).

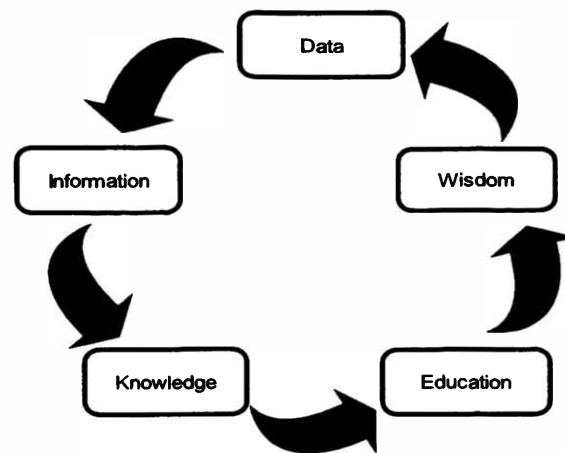


Figure 1. The learning cycle.

## TYPES OF KNOWLEDGE

Knowledge has been classified as being tacit and explicit (Polanyi 1966). Tacit knowledge has two dimensions both personal and practical. It is embedded in people’s ideas, values and emotions and is expressed more in people’s actions. It is their ‘know-how’ and shapes the way they perceive the world. In the knowledge economy interest is growing in a person’s tacit knowledge because “it is deeply rooted in action and individual commitment and to a specific context” (Nonaka 1991 quoted in Furlong 2001). Explicit knowledge is formal knowledge that is structured and recorded both in numbers and words. It is readily transmitted between people and “defines the intellectual assets of an organisation independently of its employees” (Stewart 1999 quoted in Furlong 2001).

Knowledge is not static as it moves between people. The real value of both explicit and tacit knowledge is in its application. Tacit knowledge flows from the people in the organisation to be made explicit in its policies, processes and practices. When technical writers are developing manuals, they aim to make the tacit knowledge acquired by the designer during the design phase explicit to the reader. When you consider all the communication issues of articulation and listening that occur during this process, it is not difficult to understand why some manuals are more successful than others. This is equally applicable to the translation of scientific research into the working context of rangelands enterprises.

## HOW KNOWLEDGE ADDS VALUE

It is in the differentiation between information management and knowledge management that the value lies for business. Information management uses information technology to organise and deliver information about knowledge. Knowledge creation uses the tacit and explicit knowledge of the people across the network to develop new ideas, new ways of thinking leading to greater innovation and value creation. If the supply chain only focuses on information technology, i.e., the use of technology to manage information “without consideration for how knowledge is applied, growth may be limited as

the exploitation of collective knowledge to innovate and grow the business is unlikely” (Davenport and Marchand 2000 quoted in Furlong 2001).

Value is added to the chain’s business sustainability with the identification of relevant information and the application of knowledge to the strategic future planning. While productivity and product quality are components of the ultimate drivers of innovation – profitability, there are other dimensions where knowledge contributes towards a chain’s sustainability. A growing number of organisations are realising that sustainability involves meeting the environmental and social aspects of the triple bottom line as well as financial goals. Knowledge management across this complexity ensures that time is invested wisely in meeting the growing client demand for products to be developed in a sustainable manner.

Without a process for developing new knowledge across the chain there is a danger of ‘brainstapling’ where history and habit ensures the business focus remains on what has always been. History and habit ossify thinking processes and leave the chain without flexible strategies for managing the future. Rigidity reduces the value of any knowledge input to the chain.

Supply chains that develop structures for knowledge management across the chain are actively seeking to aggregate the total knowledge potential of stakeholders to create value that is greater than the sum of the parts. The Economic Development Institute at Georgia Tech, Atlanta defines waste as “Any activity that consumes resources and creates no value. The eight types of waste are overproduction, waiting, defects, excess inventory, motion, transportation, over processing and untapped human potential”. Without structured and supported knowledge management throughout the chain much stakeholder knowledge is never tapped and its potential value to the organisation is wasted. Human potential and any competitive advantages for the chain are subsequently never realised. A chain that is truly open to change will have found ways of removing hierarchical structures which inhibit the flow of communication vertically within organisations and horizontally across the chain. Guptara (1998) identified that communicating with “employees lower down in the hierarchy” would reveal whether an organisation was “genuinely open to new ideas”. How many people employed in a rangelands enterprise understand the implications of customer requirements for their product?

Value is increased in the chain when reciprocal activities occur between employees and organisations in the chain. As stakeholders synthesise their knowledge to benefit the chain, the chain invests in the development of capability in its stakeholders both formally and informally. In the long term this investment in employees further develops the capability of the organisation and in the short term, employees solve problems and create new knowledge that builds momentum in the chain (Wenger 2003).

## **BUILDING KNOWLEDGE IN THE CHAIN**

Information or intelligence comes into an organisation in many formats – paper, internet, television, radio. Each person who uses that information will process it differently depending on their preference for receiving information, learning and communication combined with their values and previous knowledge. The information becomes personal knowledge as critical thinking processes of analysis, evaluation, review and reflection are applied. As tacit internalised knowledge it may be expressed in action but the chain may not benefit from this new insight.

When a critical mass of stakeholders comes together to participate in purposeful knowledge sharing a greater diversity of ideas is generated. It is the synergy of the interaction that creates the value in processing of information. A chain encompassing a variety of personality types, communication and cognitive styles along with different operational knowledge, has a catalyst for innovation. Socialisation is the vehicle for externalising tacit knowledge, processing and then re-internalising new knowledge leading to action. A result of this process may also be that some knowledge is regarded as redundant at this point and put aside – another step in developing wisdom.

Redundant knowledge also includes “questioning the relevance of past experiences and its appropriateness in current and future situations” to produce “radical behaviour changes in the value chain, resulting in innovative actions and processes that increase competitiveness” (Furlong 2001). Reviewing current practice in light of new knowledge is essential if the chain is to ensure that ‘best practice’ remains just that, that core competencies remain relevant and that threats and opportunities are recognised and realistically analysed (Malhotra 1998, Furlong 2001). Rangeland enterprises need to have processes for identifying current knowledge and to ensure that people have the ability to evaluate situations in light of new and old knowledge.

## CRITICAL SUCCESS FACTORS

Several factors contribute to the development of wisdom across the supply chain. Furlong (2001) identified business strategy, leadership, culture, context, organisational structure, technology and innovation as being enablers of knowledge management.

A value chain is a strategic network working co-operatively towards a common goal; therefore knowledge creation must be aligned to the business strategy and the output of quality products. Identifying the knowledge gaps in the chain that are aligned to the business strategy and processes to overcome these deficiencies ensures that the chain remains both competitive and sustainable. Processes to overcome gaps include education, training, mentoring or building a ‘community of practice’ around a particular interest area and aligned to the strategic goals. The alternative is to engage consultants and buy in the knowledge.

Leadership is essential in creating and supporting a positive learning environment. The leader is also a learner and a role model, developing a culture that is committed to sharing knowledge and creating new ideas to meet customer demand. At the core of knowledge sharing is the quality of the relationships throughout the chain. Emotionally intelligent leaders with both personal and social competence (self-awareness, self-management/social awareness and relationship management) will be able to anticipate needs and develop appropriate processes to meet those needs (Goldman *et al.* 2002, p. 54). This may be in the form of organising appropriate resources, e.g. technology to facilitate the knowledge flow across the chain, leading communities of practice, and being open to new ideas from all levels of the chain.

The quality and relevance of the initial information that flows into an organisation has a direct impact on the knowledge developed from its use. Information needs to be both timely and relevant to the context of the business. A toolbox of information and communication skills is used when accessing, using, evaluating and applying information. People working together with contextual information develop competence in knowing how and when to use these skills which impact on the way in which knowledge is developed. A rangelands’ learning community develops when learning is acknowledged as an integral part of the enterprise’s business function – knowledge is shared, people are open to new ideas and have the necessary skills to apply knowledge to the organisation.

Developing wisdom in the supply chain is a participative process for no one person in a climate of discontinuity can have all the solutions. Hierarchical structures tend to silo knowledge and discourage sharing. Opposite to this are bottom-up groups of interest or communities of practice established around a common interest and co-ordinated across the chain. These groups bring together implicit and explicit knowledge from a range of perspectives (Wenger 2003). They are a means of mentoring new members in a supportive learning culture with regard to the business strategy and how they can contribute. Lave and Wenger (1991, p. 31) identified that “learning is an integral part of social practice” and that this type of learning involves the whole person rather than being just a cognitive activity. The social nature of the ‘community of practice’ is an ideal forum for members to integrate the knowledge gained from formal learning into the chain, increasing the value of that learning both for the participant and the chain.

Networking core business activities throughout the chain builds the knowledge and skills in each of these areas and increases the opportunity for innovation throughout the chain. Positive attitudes and commitment underlie a person's motivation to participate in the flow of information within an organisation. Preventing the knowledge flow has implications for the whole chain in the quality of its products. Equally so, if a producer is unaware that their non-participation in a chain in the region affects the success of the chain, the chain will falter. Communities of practice could be centred on areas that involve people at all levels of the enterprise, e.g. technical aspects, environmental management, food safety and biosecurity, animal welfare, human resource management. Furlong (2001) further suggests that this gives a competitive advantage to the chain as increased knowledge, skills and experience in core business areas become an entry barrier to competitors. New entries would not have developed that degree of knowledge and skill but could obtain it by takeovers or head hunting.

Communities of practice as collectives of diverse stakeholders are subject to all the issues that impact on participative processes. Development of stakeholder's participation skills such as group cohesion, power sharing, communication and learning styles, conflict resolution, negotiation, active listening etc. ensures that these groups can contribute greater value to the chain.

## **HOW RANGELANDS AUSTRALIA SUPPORTS THE VALUE CHAIN**

Rangelands Australia is a client-driven, knowledge-brokering unit developing educational packages to support the sustainability of rangeland enterprises and communities. The short course and post graduate programs are a response to market research which identified the immediate and long term needs of enterprises to be sustainable in the future. The courses have been developed through a participative process with a diversity of stakeholders with an interest in the rangelands. These processes have defined the skills and knowledge required in the key areas.

Courses are designed to develop the skills of lifelong learning and build knowledge to meet increasing complexity in rangelands management. They will also nurture the personal attributes identified (in the focus groups) as necessary to be successful in the rangelands in the long run (Taylor 2002). The Rangelands Australia attributes parallel those required for vibrant supply chains in the rangelands and include:

- commitment and passion for the rangelands
- sensitivity to other values and aspirations
- practical
- self confident
- adaptable
- positive attitude to change, and
- a willingness to learn.

The participative processes used by Rangelands Australia in the development of courses ensure collective wisdom and experience of contributors is utilised to meet current and future challenges for enterprises in the rangelands. Some courses are applicable to building knowledge throughout the chain while others focus on production, particularly emphasising sustainable production (Figure 2).

Rangelands Australia is working to overcome isolation issues for knowledge building in the rangelands by delivering its courses in the rangelands. Facilitators will deliver courses wherever there are sufficient numbers to form a quorum. Courses are designed to prepare participants for future change by including the skills of lifelong learning. Participants develop a knowledge of the 'know-why', 'know-who' and 'know-how' which, in the knowledge economy, are more important than the 'know-what' – facts that can change rapidly with global communication and technological capabilities (Ministry for Economic Development N.Z. 2001).

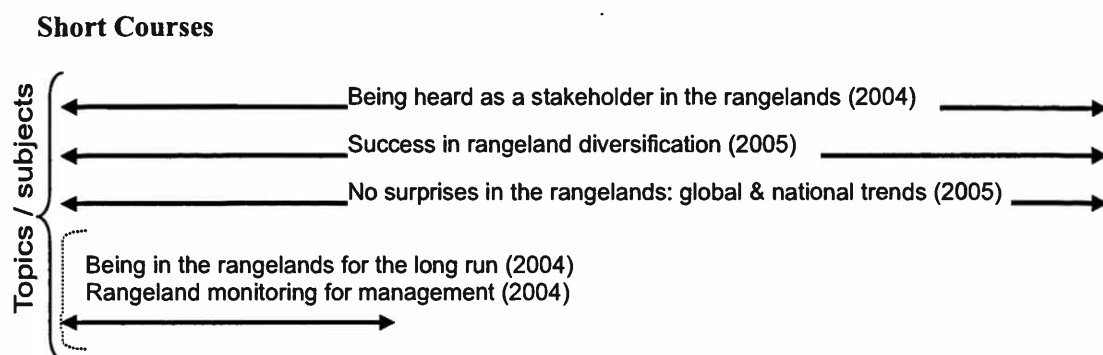
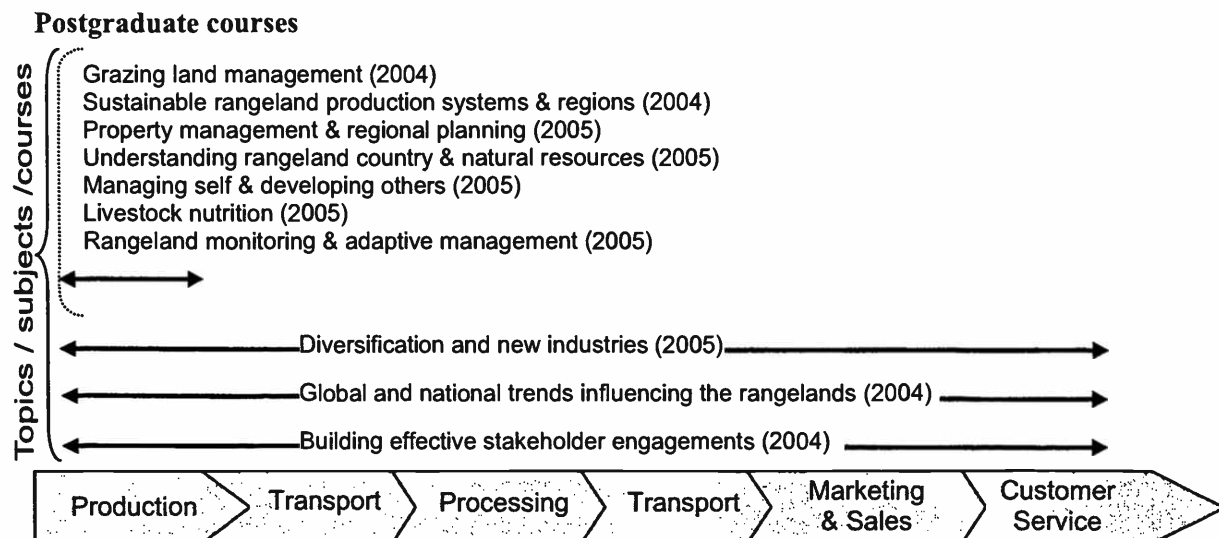


Figure 2. Rangelands Australia courses matched to the supply chain.

## CONCLUSION

The future of the rangelands lies in the enterprises that can generate innovative ways of adding value to their supply chains to meet strategic social, environmental and economic goals. People and relationships underpin knowledge management, so investment in people is an investment in the future of the enterprises in the supply chain. A wise supply chain utilises stakeholders who can reflect on past experiences, review future trends and evaluate outcomes – in short, it is a chain that can access, use and evaluate information to generate its own knowledge and to serve its strategic purpose which, ultimately, is client satisfaction!

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