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## **A FRAMEWORK VISUALISING CHALLENGES AND ENABLERS TO SUCCESSFUL LCM UPTAKE IN PRIMARY INDUSTRY SECTORS**

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### **ABSTRACT**

There is a rising awareness of environmental problems amongst organisations in the primary industries as these businesses rely heavily on natural resources. So far, research has focused on LCM implementation in individual companies to reduce environmental impacts. However, this research explores the sector-based approach as an opportunity to successfully implement LCM in primary industry sectors. A generic framework has been developed that describes the barriers and enablers to successful LCM uptake in primary industry sectors, based on the bodies of literature on LCM, SMEs, supply chain management and technology transfer. These aspects have been tested and verified through face-to-face interviews and a large scale survey with the main decision makers in the kiwifruit industry in New Zealand.

### **INTRODUCTION**

There is a rising awareness of environmental problems and wider sustainability issues amongst governments, industries and consumers (Green Growth Advisory Group, 2011; McLaren, 2008). Due to the growing relevance of the topic, there are an increasing number of drivers for companies to integrate LCM initiatives into their business practices.

New Zealand is an exporting country and the economy relies heavily on primary products: according to Statistics New Zealand, in 2010, nearly 70% of all export products were primary products. At the same time, New Zealand has a reputation for being 'green and clean' but in order to maintain and reinforce this positive reputation in global markets there is a need to implement strategies and develop management systems to back it up.

However, the progression towards more environmentally benign practices represents a challenge for many businesses in the primary industry. Most of them can be classified as SMEs, and SMEs are known to find it particularly difficult to integrate sustainability strategies effectively into their operations due to their specific characteristics, such as limited financial and human resources and lack of expertise in sustainability (Hillary, 2000; Seidel,

2011). So far, only a small number of SMEs have actually integrated a life cycle approach into their business operations and decision-making processes. Current initiatives are ad hoc and limited to individual companies within sectors.

The focus of this research is on the uptake of LCM initiatives in the New Zealand primary industry. In particular, it examines the sector-based approach to implementation of LCM in the New Zealand kiwifruit industry as an effective way of driving change in an industry and reinforcing New Zealand’s clean and green image. By applying a sector-based approach rather than an approach that focuses on individual organisations, arguably there is greater potential for reducing environmental impacts associated with an industry sector – and this will lead to competitive advantages in the marketplace.

**APPROACH**

This research can be divided into two parts. Firstly, a generic framework has been developed showing diagrammatically the major aspects faced by an industry sector during the uptake of LCM initiatives (Figure 1). These aspects have been compiled based on the literature on SMEs, supply chain management and technology transfer.

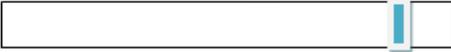
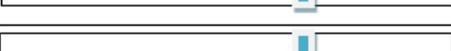
Aspect	Barrier	Enabler
Structure		
Resources		
Culture		
Knowledge and recognition of environmental issues		
Future orientation		
Perceived conflicts		
Market requirements		
Separation from consumer		
Communication		
Networks		
Evaluation		

Figure 1: Analysis of Enablers and Barriers for the Kiwifruit Sector to LCM uptake

The second part of the research involves a study in the New Zealand kiwifruit industry to test the framework. This industry has been chosen because it is New Zealand’s largest single horticultural export by volume and value, exceeding \$1billion of exports in 2012 (New Zealand Horticulture Export Authority, 2012). Furthermore, due to the restructuring Act 1999, Zespri Group Ltd is a single desk exporter with the exclusive rights to export and market New Zealand kiwifruit to countries other than Australia.



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Methods being used to test the framework but also to get a deeper insight into the kiwifruit supply chain structure; and to determine whether the New Zealand kiwifruit sector experiences the same barriers and enablers to implementing LCM as those identified in the international academic literature, were semi-structured face-to-face interviews as well as an online survey with the main supply chain entities in the industry.

During this research, seven organic growers (four small businesses, one medium sized business and two large businesses) and 13 conventional kiwifruit growers (three small businesses, two medium sized and eight large businesses) have been interviewed. The researcher also interviewed ten employees from post-harvest operators and two employees from Zespri. The interviews took place in the The Bay of Plenty as this is the focus of kiwifruit growing (principally Katikati, Te Puke, Tauranga and Opotiki); it produces 81% of the total New Zealand kiwifruit crop.

### RESULTS

Industry sectors operate in a very complex and dynamic environment. The framework described in this paper analyses and summarises the major barriers and enablers faced by industry sectors during the uptake of LCM initiatives. These are a combination of factors affecting individual companies, in particular SMEs, and factors related to supply chains and technology transfer processes.

The list of barriers and enablers to sector-wide uptake of LCM can be summarised as: fragmented industry structure; limited resources (financial, human, technical); unsupportive culture; limited knowledge and recognition of environmental issues; lack of future orientation; perceived conflicts between environmentally friendly practices and other business objectives; lack of demonstrable market requirements/pressure from supply chain partners; geographical separation of production and consumption; communication barriers; and weak networks.

**Structure** refers to structure within an organisation as well as the structure along the supply chain. It includes criteria such as division of labour as well as hierarchies of decision making, coordination and communication. Structure is closely related to the culture within an organisation and supply chain.

LCM uptake can only be successful if these barriers can be overcome. In many cases, the individual companies face difficulties due to their limited financial **resources**, which directly impacts human and technical resources. But resources are also pivotal at sector level in order to successfully network with other supply chain parties and the external environment. Thereby, knowledge and experiences can be shared in order to facilitate LCM uptake in individual companies and the entire industry sector. The **culture** of individual companies and a sector also plays a significant role in the success of LCM uptake. Culture incorporates values and beliefs and if these interfere with the belief that sustainability plays an important role for a company and an industry sector, then change of attitudes and behavior within the sector can be very difficult. On the other hand, a culture that supports the concept of environmental responsibility can facilitate the uptake of LCM.

**Limited knowledge and recognition of environmental issues** also impede successful LCM uptake in sectors and companies. It shows that education and awareness of environmental issues need to be improved through successful knowledge transfer from companies with



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success stories, as well as from researchers who develop tools and processes to facilitate LCM uptake. Limited knowledge is closely related to the **lack of future orientation** and **lack of market requirements**. If companies and sectors do not experience pressure to incorporate LCM into their operations they might prioritise other projects that do not incorporate sustainability initiatives. One barrier for organizations in LCM uptake is the perceived **trade-off between sustainability objectives and other business objectives**. Usually, businesses prioritise projects according to time and cost. If projects are vague in their financial return in the short term, SMEs in particular are unlikely to start them. Another aspect is the **separation of production and consumption**, which leads to diffused responsibility for the environmental impacts of products. **Communication and networking** is important for successful LCM uptake across a sector. It is important to develop a structure and culture that allows open and honest communication in order to develop a vision that is shared by all supply chain parties and develop and keep track of short- and long-term objectives. Communication then allows each supply chain party to see where the individual initiative fits in the bigger picture. Effective networks and contacts can facilitate knowledge management amongst supply chain parties and external environment and pool knowledge from different perspectives in order to respond appropriately to stakeholder requirements.

### CONCLUSION

In conclusion, the main enablers for the kiwifruit sector are their specific monopoly structure, the culture, the knowledge and recognition of environmental issues as well as the future orientation and awareness of market requirements.

Lack of financial resources as well as appropriate technical resources create a barrier for this industry in the successful uptake of LCM. This is closely related to the perceived conflicts between business objectives which do not lead to prioritisation of LCM initiatives at the moment. The separation from consumers is particularly a barrier for growers and post-harvest operators. Communication, networks and evaluation should also be improved in order to serve as enablers for successful LCM implementation sector-wide.

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