Chapter 12
The Agri–Food Industry and the E–Landscape

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ABSTRACT

This chapter provides a brief introduction to the agri-food industry sector and the role that electronic technologies are increasingly playing in ensuring a highly competitive business environment from production through to the final consumer. Key issues such as the dynamics of sustainable production, the drivers of supply and demand and globalised markets, as well as food safety and food security, are discussed within a “Food for Thought” section which provides the context for a more detailed look at a series of technologies used in various agri-food industry chains. Included for special discussion are those ‘e’ technologies associated with precision farming, electronic animal identification, robotic weed and pest control, cold chain RFID logistics tracking and e-commerce. The chapter concludes with a look at emerging issues for businesses within the agri-food industry going forward within the global electronic landscape, their significance, and some potential solutions.

INTRODUCTION

In the minds of the public at large, food production has long been associated with on-farm agricultural endeavors - that is, the physical production of crops and livestock. The image that is conjured up tends to be of people on tractors ploughing and sowing the crop seed, or a herd of cattle being mustered in dusty conditions or of backbreaking harvesting of fruit and vegetables by hand. In other words an industry based on hard manual labour. While such production is of course part of the process of putting food products onto retail shelves, it is actually only the start of a very complex set of business processes and systems which have developed over time and involve some of the most innovative technologies developed.

The objectives of this chapter are:

1. To briefly introduce the agri-food industry, its complexity and its importance to society
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through its integral role in sustaining the world’s population.

2. To introduce the eLandscape and to provide an up-to-date review of how electronic technologies are being used across the whole agri-food industry from Paddock to Plate in order to address the growing requirement of a global food market.

BACKGROUND

The Agri-Food Industry

The world’s population must have food – without nourishment humans cannot survive. Both creating and supplying food is therefore a critical component in any and all approaches to creating a sustainable planet and eradicating hunger (Eriksen, 2007, 2008). The industry primarily involved is a large, multifaceted industry sector known as the agri-food industry that exists worldwide, and involves a range of businesses that create industry specific (e.g. grains, sugar cane, dairy, meat, fruit and vegetables to name a few) agri-food chains that often exist across international boundaries. Businesses in such chains (Ricketts & Rawlins, 2001) include:

- **Input Suppliers** (e.g. Agricultural chemical and fertiliser companies such as Incitec/ Pivot, Bayer and Cargill etc);
- **Service Suppliers** (e.g. Banks, R&D organisations, Governments, Consultants etc);
- **Producers** (e.g. Growers of grain, meat, dairy, cotton, fruit, nuts, etc);
- **Wholesalers/Distributors** (Marino Brothers, Sysco, Vestey Group, Shenzhen Agricultural Products Co Ltd etc)
- **Traders** (e.g. Mitsubishi, Australian Wheat Board, Bohemia Nut Company, ConAgra, etc);
- **Processors** (e.g. Peanut Company of Australia, Flour Mills, Parmalat, etc);
- **Manufacturers** (e.g. Companies such as Kraft, Mars, Unilever etc);
- **Retailers** (e.g. Supermarkets such as Tesco, Carrefour, Woolworths as well as smaller retail outlets);
- **Logistics** (e.g. Transport and storage companies such as FedEx, TNT, Euro Pool System, iGPS etc).

Industry deregulation, enterprise restructuring, technology development and uptake, innovation, changing export dynamics and an increasing focus on chain management are all providing both opportunities and stresses for businesses involved in the agri-food industry - as they do for all industry sectors. However there are two major issues for the agri-food industry as a whole that differentiates it from other industry sectors. First and foremost the industry is essentially made up of many different food product chains as outlined above (Thompson et al, 2007; McCulloch et al, 2008) - that is, many specific raw products (e.g. differing varieties of wheat) grown on farms, are transformed through their various chains to manufactured food products (such as bread, biscuits & cakes or pasta dependent on the wheat variety in this example) bought by consumers from the shelves of a retail outlet (IBISWorld Report, 2009). The overall process involves many players and many processes and is regarded as a complex system (Bryceson & Smith 2008). With increasingly competitive and quality conscious global marketplaces for food products, governments and agri-food chain members are beginning to recognise that a whole-of-system approach is the key to successfully addressing the increasingly critical requirements of the agri-food industry as a whole - those of food integrity and traceability - which themselves have become the key to answering consumer demand for safe, clean food with an emphasis on quality (USDA, 2002).

The effectiveness of any agri-food chain will depend on how well its activities integrate and coordinate to create efficiency and value at each link of the chain as well as the value created