The Impact of Information Technologies on the US Beef Industry’s Supply Chain

Brian. D. Neureuther, State University of New York at Plattsburgh, USA
George. N. Kenyon, Lamar University, USA

ABSTRACT

Historically, the growth of the beef industry has been hampered by the various entities (breeders, cow-calf producers, stockers, backgrounders) within the beef industry’s supply chain. The primary obstacles to growth are the large number of participants in the upstream partners and the lack of coordination between them. Over the last decade significant advances have been made in information technologies. Many new companies have been founded to promote these technical advances. This research looks at the upstream participants, primarily the buyer agencies and principles between the cow-calf producers and the meat packing companies, to determine the degree to which information technologies are currently being utilized and the degree to which these new technologies have driven improvements within the beef industry’s supply chain. We find through our survey that, by and large, the beef industry does not use information technologies to their benefit and that the U.S. beef supply chain is not yet strategically poised to enable the use of these technologies.

Keywords: beef industry; business management; coordination; information systems; information technology; supply chain

INTRODUCTION AND BACKGROUND

The beef industry is characterized by several distinct levels of participants; breeders, cow-calf producers, stockers, backgrounders, auction markets, finishers, meat packers, meat processors, distributors, and retailers. Lamb and Beshear (1998) asserted that the various groups that comprise the beef industry’s supply chain pose a significant obstacle to the overall growth of the industry and that large numbers of participants in the upstream groups are hindering the coordination of better supply chain practices. The structure of the beef industry’s supply chain can be seen in Figure 1.

Cow-calf producers (or breeders) produce calves and feeder cattle that are grown and cared
for and are then shipped to stocker operators and feedlots. Stocker operators (also called backgrounders) keep an inventory of mature cattle and will put weight on the cattle before they go into feedlots. The feedlots (finishing operations) buy cattle and finish growing them in feedlots for distribution to market. Packers purchase cattle, from feedlots, that have reached the required weight for slaughter and processing. They sell the further processed carcasses as boxed beef to retailers and food service operators who prepare them for human consumption. On occasion, the prepared beef is sold to a purveyor (or meat wholesaler), but the majority of the prepared beef is sold directly to supermarkets and independent grocery stores.

Even though the demand for meat products has been growing in the U.S., the beef industry has been losing market share over the past several decades. The decline in beef has occurred while the U.S. has become the global leader in beef production, with 24.7 billion pounds of beef produced in 2005 (U.S.D.A. Economic Research Service, 2006). This loss of market share is a result of several factors: lack of consistency of the quality of beef products, availability of substitute products, lack of variety in beef products, and consumer concerns on health and safety (see Romage, 2005; Tomson, 2005 for recent improvements to beef trade on the basis of health and safety). Many of these issues are directly related to the inefficiencies of the beef industry’s supply chain.

Akerlof (1984) theorized that asymmetric information between buyer and sellers could ultimately result in adverse product selection and eventual market failure. It was his belief that without an asymmetric flow of information between buyers and sellers, low quality goods would increasingly be erroneously promoted as high quality. Kularantna, Spriggs, and Story (2001) assert that the traditional beef marketing and supply chain systems are failing to transfer information about quality and customer requirements upstream to the producers. They believed that the current method of marketing live cattle

---

**Figure 1. The beef industry supply chain structure (Geiman, 2003; Hanselka, Davis, Anderson, & Capps, 2004; USDA NASS, 2006; USDA’s NAHMS Report, 1998)**

- In 1998, there were approximately 1,200,000 US beef operations.
- In 2000, there were approximately 1,076,370 US beef operations.
- In 2004, the number of operations with cattle was 989,460.
  - In 2003, the number of Stocker/Feeder operations was approximately 265,000 farms.
  - In 1996, there were roughly 41,365 feedlot operations.
  - In 2004, the number of feedlot operating at any time was 2,052.
- In 2003 there were 450 meatpacking operations in existence.
- In 2002, the top 20 retailers accounted for 59.6% of the US beef sales.
- In 2003, 18.9 billion pounds (retail weight) of beef were consumed.
- In 2003, the number of Stocker/Feeder operations was 265,000 farms.
- In 2000, the number of operations with cattle was 1,076,370 US beef operations.
- In 2004, the number of feedlot operating at any time was 2,052.
- In 2003 there were 450 meatpacking operations in existence.
- In 2002, the top 20 retailers accounted for 59.6% of the US beef sales.
- In 2003, 18.9 billion pounds (retail weight) of beef were consumed.
16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/article/impact-information-technologies-beef-industry/2497

Related Content

Knowledge Management
www.irma-international.org/chapter/knowledge-management/37617/

The Impact of Information Technologies on the US Beef Industry’s Supply Chain
www.irma-international.org/article/impact-information-technologies-beef-industry/2497/

Lean Thinking Based Investment Planning at Design Stage of Cellular/Hybrid Manufacturing Systems
www.irma-international.org/chapter/lean-thinking-based-investment-planning/60005/

When Supply Chain Strategy Does not Match Supply Chain Capabilities: Lessons that can be Learnt from the Supply Chain of Boeing 787
Narasimha Lamba and Ehsan Elahi (2012). Teaching Cases Collection (pp. 159-177).
www.irma-international.org/chapter/when-supply-chain-strategy-does/62165/

Application of Dynamic Analysis in a Centralised Supply Chain
www.irma-international.org/chapter/application-dynamic-analysis-centralised-supply/50445/