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International Food and Agribusiness Management Review
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Executive Summaries

RESEARCH

Conceptual Links between Two Mad Cow Crises: The Absence of Paradigmatic Change and Policymaking Implications

JoAnne Labrecque and Sylvain Charlebois

BSE, perhaps one of the most significant food safety predicaments the world has seen in recent years, is changing many trading parameters for international food marketing. Industrial imprudence has led to the inception of a devastating human-induced crisis that has captured the attention of many industry leaders, policymakers and citizens around the globe. It seems that humanity has reached a key juncture in the relationship between food supply and food policy, and both public and private agencies are failing to grasp the essence of the problem. Because of BSE, the state, the corporate sector and civil society in general are facing difficult decisions. In food safety, public policy often lags behind the restructuring taking place in the food system and is often reactive. Food manufacturers are driving the political agenda on food safety, arguably at the expense of producers. By considering the structure of the food supply chain, cohesiveness between the industry and government is more necessary now than ever before.

Food safety will face many obstacles in the future. Market abnormalities and behavioral system inefficiencies may in the future create more unpredictable outcomes. To establish efficient worldwide food safety standards, an extensive social and political process is necessary. Some initiatives have come forth with new insightful ideas, but nothing as of yet has had any managerial panache. The abnormality of markets allows countries to protect their interests and make decisions to protect their market without passing any moral judgment on the issue at hand. The task of making collective decisions about food safety is and will be up to socio-political systems around the world.

The BSE crisis that occurred within the British beef industry is analyzed in this article by taking into account that the affected economy is political rather than purely economic. By doing so, the British industry is examined as a behavioral system inside socio-political structures (i.e. power/dependence relations) and processes (i.e. cooperative/conflictive relations). The first objective of this research is to understand how the British BSE crisis, which created environmental uncertainty within a beef distribution channel, influenced policy-making processes and

structures of Canadian related federal and provincial agencies seven years later. In addition, by conceptually contrasting the two distinctive BSE events, the second objective will be to assess whether the British BSE event had any influence over Canadian public policies related to food safety prior to May 20, 2003, the day the announcement of the diagnosis of the first Canadian BSE case was made public by the CFIA.

Performance Improvements through Implementation of Lean Practices: A Study of the U.K. Red Meat Industry

Keivan Zokaei and David Simons

The UK red meat industry has undergone several crises such as the (BSE) Bovine Spongy Encephalopathy; better known as the Mad Cow disease epidemic, outbreak of Foot and Mouth disease; and extensive change including the UK retail chains oligopoly increased supply chain power, higher penetration of low cost imports (both new EU members and other regions) and, most importantly, decoupling of the subsidy payments from production. In this situation, there is an immediate need for operational and logistics improvements. This paper puts forward Lean Thinking as a source of best available practices and a business model, which encourages continuous pursuit of perfection. Lean Thinking has offered massive benefits to other sectors of the industry from automotive to banking. The authors propose a taxonomy of different layers of lean implementation – known as the 3P's model (i.e. philosophies, policies and practices). This paper reports only on part of the findings from an extensive research program, which looked into eight red meat value chains in three countries. This paper identifies the bottom-line impacts from implementation of two specific lean practices, i.e. Takt-time and work standardization, at the various stages of the supply chain from farm to point of sales. The analyses show that these two lean practices offer 2-3% potential cost savings to each actor along the supply chain, against their current selling prices.

A Framework for Evaluating Return on Investment in Management Development Programs

Kara Lynch, Jay T. Akridge, Scott P. Schaffer and Allan Gray

Investment in managerial training and development by food and agribusiness firms represents both an important tool of strategy to build competitive advantage and a significant commitment of financial resources. As such, there is increased interest in evaluating the impact and effectiveness of such managerial development investments. One such form of evaluation is through assessment of the return on investment (ROI) of training and development activities.

ROI is a financial analysis metric that involves a comparison of total benefits to total costs. Using ROI to evaluate training investments presents a challenge in that the results of training and development programs are not typically evaluated in terms of their effect on business results. As a result, while much has been written about ROI assessment in theory, useful tools for implementation of the idea are not

readily available for training and development investments. The objective of this research is to develop an evaluation process using ROI to assess the financial performance of management development programs for food and agribusiness firms.

Based on extensive review of the education literature, a three-phase model for ROI evaluation is developed. These phases include assessment planning, data collection, and data analysis. The first phase establishes the objectives for the training program, the purpose for the evaluation, and determines the specific evaluation techniques to be employed. The second phase, data collection, involves application of a battery of techniques including a survey of open-ended questions specific to the objectives for each training program. The last phase involves analysis of the data collected and determining return on investment. This model is then tested and applied to a management development program developed by the Center for Food and Agricultural Business at Purdue University. The framework developed in this paper will provide a useful tool for those involved in developing, delivering, and evaluating managerial training and development activities.

IQF Catfish Retail Pack: A Study of Consumers' Willingness to Pay

Kwamena Quagraine

The foodservice sector including restaurants and fast-food outlets has long been a major market outlet for U.S. farm-raised catfish products. However, the catfish industry has expressed interest in expanding sales through the grocery market channel because of the competitive nature that imported fish fillets pose at the foodservice sector market. It is envisaged that the marketing strategy of country-of-origin labeling (COOL), emphasizing "U.S. farm-raised catfish" can be better pursued at the grocery retail market level than at the foodservice sector level. Proper household-size retail packages for catfish could be used to provide labeling information on origin, price, quality, nutrition, product safety and other relevant product information to consumers. That way, a positive relationship could be developed between consumers and U.S. catfish to establish a U.S. farm-raised brand equity and loyalty, and probably a guarantee of quality and safety.

The study examined consumers' willingness to purchase a household-size pack of individual-quick-frozen (IQF) 6-fillets of catfish, and determined how much (\$/lb) households will be willing to pay (WTP) for such a retail pack. A mixed logit model was applied to data obtained from a consumer survey conducted in selected southern U.S. cities.

The variables examined included: willingness to pay for an IQF 6-fillet household-size pack of catfish; frequency of fish purchase (attitudinal variables); importance of product origin and packaging in fish purchasing decisions (informational variables); and demographic factors. About 56% of respondents expressed positive WTP values for a household-size 6-fillet pack of catfish. The average price households were willing to pay is \$4.37/lb. Forty four percent were not willing to pay any price for this product. The responses comprised of 58.1% Whites, 31.1% Blacks and 3.3%

Hispanics. Females constituted 61% of the responses, the average age was 44 years, and average household size is 3. Important factors found to affect willingness to pay include; fish buying patterns, household size, race, age and gender.

The attitudes of respondents regarding frequency of fish purchase were varied, implying that marketing strategies for new products should view consumers as a heterogeneous and not a homogenous group. Frequent fish buyers were willing to pay more for the product and as such continued availability of the product is important to market success. Targeting this group of shoppers will be an effective marketing strategy based on attitudinal segmentation. There is also the need for a clear indication of product source or origin on retail food packages to enable buyers make informed purchase decisions. Promotion of a household-size 6-fillet pack of catfish should target consumers in regions where fish consumption is high and there is potential for the sale of retail packages in regions where the Hispanic population is high.

INDUSTRY INTERVIEWS

Feature - Executive Interviews

Introduction

Francesco Braga, Executive Editor, IFAMR

It is a pleasure to write this short introduction to this Special Feature with four contributions from students who attended the 15th Annual World Food and Agribusiness Forum, Symposium, and Case Conference which was held in Chicago Illinois on June 25-28, 2005.

IAMA pays particular attention to future colleagues and strives to assist them as they complete their academic education. Thanks to the generosity of a number of institutions and individuals, IAMA offers several travel grants to help defer the cost of attending the annual World Conference. There, students from all over the world enjoy the opportunity to network with peers and senior colleagues, the access to potential employers, and the possibility to be alerted to and develop new professional ideas and skills.

The four contributions that form this special feature document one of the activities that IAMA offers to student members attending the World Conference. Students are individually linked with a senior corporate or government executive, or with a senior academic, and, at the conference, have the opportunity to interview him or her. Links are arranged according to common professional interests, and students are encouraged to prepare a formal contribution to the IFAMR.

Dr. Eluned Jones, Texas A&M University, advised the students during this activity at the 2005 Conference in Chicago. In addition she served as Guest Editor of this

special feature and selected these four contributions from the 17 that were received by IAMA. Thank you, Eluned! The publication of this special feature in Volume 9, Issue 2 of the IFAMR, published in May 2006, is timely as we head to the 2006 Conference in Buenos Aires. The hope is that these contributions will inspire and motivate the students attending Buenos Aires.

A special thanks also to all executives who donated their time to nourish our students. We all know how busy you are and how precious your time is. These efforts, in the true spirit of IAMA, are most appreciated. Again, thank you! By the way, the odds are that you met a bright person who in the near future might come to work for your organization. Best wishes to both of you!

A final word to the students attending Buenos Aires: be inspired, be enterprising. Do not be shy, and take the opportunity to approach your senior colleagues. IAMA conferences are really unique, as you have informal and uncluttered access to a number of key players in global agribusiness. They are always looking for bright individuals; this may be your unique chance to build that key personal link that later may result in a world of opportunities. Again thank you to the senior executives, to the students, to Dr. Jones.

Gianluigi Zenti, President, Academia Barilla SpA – The Changing Consumer: Demanding but Predictable

Jochen Hartl

Consumers' choice is getting more complex and differentiated. These changes pose new challenges for food manufactures, but also provide new opportunities for them to add value and differentiate products. For this background it is crucial to understand and predict consumers' behaviour to meet future consumer demands.

To contribute to this discussion, this report describes how consumers' behaviour, in particular with regard to Italian food, has changed from the perspective of Barilla, one of the leading manufactures of Italian food. Academia Barilla Director Gianluigi Zenti, who is credited with building the Barilla brand in the US, gives an insight into evolutions on the demand side and how Barilla responded to them.

Two major conclusions can be derived. First, consumers hold more differentiated views about Italian food today, for instance more and more consumers know about regional Italian food.

However, they often do not get the full information regarding real Italian food versus substandard imitations. Thus, the basic mission of Academia Barilla is to develop, protect and preserve the cultural identity by educating the consumers about real Italian food.

Second, the evolution of food is that the physical component of a product becomes less, psychological and cultural related components become more important. Thus,

for Barilla it is more and more important not just to rely on the plain physically components in order to be recognized by the consumers; rather it is becoming essential that consumers link their products with emotional and aspiration values. Gianluigi Zenti emphasizes the importance to build equity in the area. Barilla took that challenge and builds on emotional and aspiration values by promoting authentic Italian food, lifestyle and image.

Robert T. Martin, Managing Director and Regional Executive, Bank of Montreal, BMO Financial Group – Doing Business in China

Juan Liu

This interview concerns doing business in China given the rapid changes and industrial development of that country. This report is based on an interview with Robert T. Martin, Managing Director & Regional Executive of BMO Bank of Montreal in June, 2005. Recent federal government financial reform efforts in China have facilitated foreign banks' business development as part of the Chinese WTO market-opening commitment. Foreign banks' development in China's markets is based on two key drivers: client demands and product expertise. Foreign banks are concerned about the capability of competition and sustainable development, and new product introduction in niche market that are regulatory compliant.

Outside BMO's home markets in North America, China is currently the country with the largest number of offices. BMO's business activities in China present a small but increasing percentage of BMO's financial performance. BMO is the leading foreign bank in terms of foreign exchange volumes in China. BMO's major financial services in China focus on corporate investment banking with emphasis on building institutional relationships. It also assists new Chinese immigrants by providing them financial information and building up their first banking relations with Canadian banks. Moreover, BMO has started direct investment through its investment bank in a Chinese fund management company since 2002. This investment makes BMO a frontrunner in its field in terms of direct shareholdings in a Chinese fund management company.

Martin's comments reflect the big opportunities and challenges in China's market. In financial markets, it remains relatively restricted while facing gradual liberalization. Martin provides his opinions on the current important issue of China's entry into WTO and Chinese currency revaluation. He also stresses the importance of maintaining good relationships with government regulators and on-going dialogues with various sectors and industry groups.

For first-entry clients into China, Martin suggests that they should not become overly optimistic. Since China is changing and developing quickly, first-mover advantage is not the only issue that matters. Reasonable expectations of the Chinese market can only be made with regular visits to China and continuous intelligence gathering to keep abreast of the evolving dynamics.

Ross McLaren, Retired President and CEO, Shaw's Supermarket, Inc. – The Changing Consumer: Demanding But Predictable

Nkosazana Mashinini

The Research Question

Food consumption patterns have changed to a considerable extent in the 21st century. One feature of these changing consumption patterns is that consumers have become more demanding. For developed countries, enhanced income has increased the demand for processed foodstuffs and high-value food services. Consumers now have a lot of money to spend. In most cases, higher incomes foster the demand for a much wider variety of products from which consumers can choose, thus increasing the propensity for indulgence. Another fact that has played a significant role in changing consumers demand is increasing urbanization which has altered lifestyle patterns. A notable feature is the increase in the number of women entering the labor force. All these have triggered the demand for convenience. It is important for food retailers to be able to anticipate and respond to these changes. The present report reviews the current situation with regard to consumer buying and expenditure patterns and how the retail industry is responding.

Study Description and Methodology

As part of the activities for the 15th Annual World Food and Agribusiness Forum, Symposium and Case Conference held in Chicago in June 2005, an industry interview was conducted with the retired President and CEO of Shaw's Supermarket Inc, a major US food retailer, to address the key issues of the industrial organization and clientele, consumer buying behavior, and strategies to deal with these changes in consumption and expenditure patterns. The interview followed an agreed format of both open-ended and structured questions and the responses were recorded, analyzed and subsequently reported at the end of the conference. An opportunity was provided for the interviewee to comment on the initial draft report before it was finalized.

Results

From the perspective of the food retailer, the changes in consumer consumption and buying behavior have been quite radical. The food retailers have witnessed the tendency for improved purchasing power to cause demand to change towards high-value service products like processed and ready-made food which are more convenient. Consumers demand more prepared meals that must come as ready-to-prepare or ready-to-eat, causing the market share of supermarkets to go down relative to those of fast-food chains and restaurants. Food retailers consider that the recent introduction of food standards and control measures are an influence of media hype that advocates stricter regulation and has in turn given rise to the demand for product traceability. Most products on Shaw's shelves, for instance,

satisfy the traceability requirements and labeling needs to meet consumers' demand.

Management Implications

There seems to be a greater degree of client orientation in the way retailers do business because, recognizing that 'retailing is about meeting consumers' needs and good retailing is anticipating their needs before hand'. A stronger role for Research and Development is recognized to enable stakeholders deal with these changes because some of these changes, particularly those related to health concerns and food safety issues, need scientific research support. Management expertise is required to anticipate these changes and respond to them in the appropriate manner.

Harsha de Silva, Director, E-development Labs (private) Limited and Senior Economist, LIRNEasia – Agricultural Market Development through Information and Communication Technology (ICT): A Developing Country Experience

Olubukola .A. Oyewumi

LIRNEasia (www.lirneasia.net) is the Asian affiliate of LIRNE.NET, collaboration among leading universities in Denmark, the Netherlands, South Africa and the United Kingdom. LIRNEasia endeavors to transform governance and regulation of ICTs in the Asian region from obstructive, inhibiting regimes, into ones that will allow opportunities for people to use ICTs in ways that will improve their lives. They also seek to expand opportunities for entrepreneurs to introduce and market products and services with minimum government interference.

Dr. Harsha de Silva joined LIRNEasia in 2001 as a senior consultant economist and he is presently a director at the organization. He was the lead conceptualization and design member of World Bank funded Sri Lanka Development Gateway (LkDG) in 2004. At LIRNEasia, current projects being led by Dr. de Silva at LIRNEasia include, analysis of the subsidy system to extend coverage to the unconnected rural households in India and assessing Asia's first least-cost subsidy auction in design for rural telecommunications in Nepal.

He is the architect and implementer of Govi Gnana Service (an agricultural knowledge service: GGS). GGS is an innovative ICT enabled agricultural marketing solution that is now being hailed as perhaps a key breakthrough to address the perennial problem faced by farmers in finding markets for agricultural produce. He created an ICT enabled prototype for auctioning tea, named "electronic open outcry spot auction platform for tea" for the Colombo Tea Traders Association.



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Conceptual Links between Two Mad Cow Crises: The Absence of Paradigmatic Change and Policymaking Implications

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Abstract

On March 20, 1996, a day known as Black Wednesday to the British beef industry, the British Secretary of State of Health announced that a possible link existed between BSE and the Creutzfeldt-Jakob disease (vCJD), the human variant of mad cow. Seven years later, a somewhat comparable fate struck the Canadian beef industry. In May 2003, the discovery of the first native North American case of BSE in Canada deflated the prospects of the industry across the country, consequently creating environmental uncertainty. This paper conceptually analyses the events that occurred in Britain by considering the beef industry as a political economy. The authors find that socio-political structures, driven by power and dependency relations, socio-political processes, and driven by cooperation and conflicts within a marketing channel greatly influenced channel members' behaviors during this crisis. In addition, even though some changes were made, the authors believe that, based on the conceptual analysis of the first year following this critical event, Canadian beef industry leaders and government alike did not learn sufficiently from the unfortunate events that occurred in Britain in 1996, even if some stakeholders believed that they had.

Keywords: BSE, food safety policies, food marketing, food distribution, crisis management

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Introduction

On March 20, 1996, a day known as “Black Wednesday” to the British beef industry, the British Secretary of State of Health announced that a possible link existed between BSE and the Creutzfeldt-Jakob disease (vCJD), the human variant of mad cow, thus creating environmental uncertainty in the food chain. Retail sales of beef products in the two weeks after March 20, 1996, fell in excess of 33 per cent and continued to fall over the following month, thus demonstrating the preliminary impact of the scare on the purchasing behavior of British consumers. Massive media coverage about the uncertainty, the lack of information, and what the announcement really meant for food and public safety overtook the political agenda of the British beef industry. Other countries around the world, including Canada and members of the European Union, banned imports of British beef products. Major restaurant chains, including McDonald’s and Burger King, saw their sales decline.

Seven years later, a somewhat comparable fate struck the Canadian beef industry. In May 2003, the discovery of the first native North American case of BSE in Canada deflated the prospects of the industry across the country, consequently creating unmanageable uncertainty. The Canadian Food Inspection Agency (CFIA) started a thorough investigation and ordered the slaughter of some 2,700 animals. However, international trading partners’ confidence level in the quality of Canadian beef and in Canada’s food safety policies had dropped. Thirty-five countries issued an embargo on Canadian beef, most notably the United States and Japan, the main trading partners for Canadian beef related products, and the commodity price of Canadian beef on international markets plummeted. Initially, some industry officials had quickly denied the seriousness of the situation and the long-term impact it would have on the future of the industry. Many channel members, most notably producers, adopted a regressive attitude, attempting to maintain the earlier status quo. Consumers on the domestic market, on the other hand, unexpectedly continued to purchase Canadian beef products, indicated by a slight increase in Canadian domestic demand (CANFAX 2005).

As evidenced by first the British and then the Canadian BSE crisis, the emergence of complex diseases in the food chain around the world has made food safety policy-making procedures even more multifarious. Trade policies have influenced public policies on food safety, and science has developed faster than food safety policies, or even the capacity of national regulators. It makes any BSE crisis a socio-technological disaster.

In the present paper, the events that occurred within both the British and Canadian beef industries are conceptually analyzed by considering the two as political economies (Stern and Reve 1980, Arndt 1983). By doing so, both beef industries are considered as behavioral systems inside socio-political structures (i.e.

power/dependence relations) and processes (i.e. cooperative/conflictive relations). The first objective of this research is to understand how the BSE crisis in Britain, which created environmental uncertainty within a beef distribution channel, influenced and continues to influence policy-making processes and structures of related food safety agencies (Achrol, Reve and Stern 1983). In addition, by conceptually contrasting the two distinctive BSE events, the second objective will be to assess whether the British BSE event had any influence over Canadian public policies related to food safety prior to May 20, 2003, the day the announcement of the diagnosis of the first Canadian BSE case was made public by the CFIA.¹

Crisis and Uncertainty

Premises of a Crisis

To fully appreciate whether or not we are in fact dealing with a crisis, we must consider the premises of a crisis. Although the study of crisis management was first introduced in the domain of political science, it involves multiple disciplines, including marketing, though crisis management is a relatively new concept in marketing. Growing numbers of scholars and managers alike recognize that a crisis, despite its negative characteristics, can be a powerful catalyst for change and learning (Pauchant and Mitroff 1992). Toward the end of the 1970s, academics in management began to demonstrate an interest in crisis management, producing relevant literature and recognizing its pertinence to everyday managerial responsibilities (Perrow 1984, Lagadec 1991).

Crisis management literature was invoked during marketing research and strategy (Clark 1988), product management (Siomkos and Kurzbard 1994), sales force management (Carter 1997), distribution (Czinkota and Kotabe 2000), market orientation (Grewal and Tansuhaj 2001), and in the service industries (Litvin and Alderson 2003). In relation to food safety issues, the concept of crisis management has already been applied by marketing academics (Finn and Louviere 1992). By necessity, the food and agriculture industries have had to radically increase their mass production methods and streamline their marketing procedures in order to supply the ever-increasing world population and open borders. Because of this, any

¹ At the time this article was written, the newness of the Canadian BSE crisis prevented us from conceptually dissecting the event and outcomes in a longitudinal manner. Therefore, the conceptual analysis is based on the events that occurred in Britain and Europe, and on the events of the first 12 months of the Canadian BSE crisis.

system breakdown or abnormality in their industry will also be to the distinct detriment of large numbers of people (Mitroff 2002). By definition, a crisis can be either human-induced or created by natural disasters. Most academic research was focused on human-induced crises, including the Britain BSE crisis, which is considered to be a socio-technological disaster (Denis 1993, Pearson and Mitroff 1993). In a crisis, antagonism and rivalry are sometimes replaced by increased solidarity. A crisis reveals what was hitherto concealed and often impels changes that organizations should have made previously (Morin 1976). Modern technology causes managerial complexity to increase, which in turn increases the likelihood of a crisis in any given domain (Morin 1976, 1991, Weick 1993, Quarantelli 1996). Notwithstanding improved safety measures and greatly reduced risks of error when incidents do occur, the resulting crisis is usually colossal.

The British and Canadian BSE crises can also be considered as socio-political crises, with their foundation coming from an element outside of the industry (Mitroff and Shrivastava 1987). The premises of a crisis help identify the event as a crisis, which can be described as a crucial stage or turning point in a process or an unstable situation of extreme danger or difficulty, as exemplified by the following three criteria. First, the internal system of an organization or an industry has to be entirely affected by the event (Roux-Dufort, 2000). Second, the fundamental principles of implicated subjects are questioned, altered, or even protected by newly created tacit defence mechanisms (Pauchant and Mitroff 1995). Lastly, no active mechanisms within an organization can be employed to regain its former condition, processes, or structure. There are ruptures between traditional managerial practices and anchored paradigms (Lagadec 1991).

Definition of a Crisis

No universal definition of a crisis exists, and many have claimed that no such definition can exist. Nonetheless, some scholars have presented possible definitions. For example, Pauchant and Mitroff (1995) brought the concept of crisis to an individual level, defining a crisis as an unexpected event that pressures concerned individuals to manage a situation that threatens their personal objectives. However, for the purposes of this study, the following definition, presented by Lagadec (1991), is favored:

A crisis is equal to a lack of knowledge, the unknown and an invasion of unexpected uncertainty (31).

Lagadec combines environmental uncertainty and the occurrence of crisis, which appeals to the conceptualization of the comparative analysis. Food safety crises expose members to environmental uncertainty, questioning the viability of the marketing channel itself. Based on the case study of the 1996 British BSE crisis (see Table 3.1), it can be argued that food crises create environmental uncertainty.

This uncertainty results from a lack of knowledge about the outcomes of each alternative, as the conditions that will exist are neither known nor are predictable (Knight 1933). Being unwilling or unable to estimate the probability that certain conditions do exist generates environmental uncertainty. The case study on the British BSE crisis also illustrates that uncertainty, or environmental uncertainty, has altered inter-organizational relationships within the marketing channel. Any external economic or political force that changes the environmental structure of a marketing channel is bound to affect the degree of environmental uncertainty experienced by its members (Achrol and Stern 1988).

Both the existence and the duration of a crisis can be defined by the incessant search for a solution to the crisis (Rosenthal and Kouzmin 1993). Every crisis has its distinctive points, where the evolution of incidences can dictate whether or not the crisis is over or not. The duration of a crisis can also be based on the uninterrupted level of environmental uncertainty.

Epistemology of a Crisis

A crisis is often accompanied by confusion and dysfunctional sense-making from the organization and people directly involved in the crisis, as a crisis usually enhances demands on sense-making (Weick 1990, 1993). In addition, no recognizable or standardized methods apply during a crisis (Roux-Dufort 2000), as most members tend to doubt organizational culture, values, and symbols, even at the channel level (Hurst 1995). Channel members would also look for apportion by seeking to deflect blame for the cause of the crisis to scapegoats (Elliott, Smith, and McGuinness 2000). As well, they may experience loss of identity and incoherent behavior (Pearson and Clair 1998), demand and technological uncertainty (Grewal and Tranship 2001), and a lack of long-term vision when making important strategic decisions (Roux-Dufort 2000). No channel members assume a systematic approach to problem solving or apply critical thinking (Mitroff and Shrivastava 1987).

During a crisis, blockages in learning and cognitive processes are always evident (Bateson 1972), and estimating the consequences of actions is often difficult (Weick 1993). Moreover, channel members also have difficulty in evaluating goals and deadlines. Inter-organizational relationships are marked by a denial of responsibility, and all parties involved generally maintain this state of denial. Most crises force conformity to regular procedures, as many channel members aim at retaining the status quo, the situation prior to the crisis (Perrow 1984). Channel members make an effort to gain time, and decision-making capacities on market orientation are non-existent (Grewal and Tansuhaj 2001).

The epistemology of a crisis recognizes that, in order to resolve the situation as quickly and thoroughly as possible, channel members solicit outside the channel, as they experience a sense of lost strategic resources (Roux-Dufort 2000). In doing so,

many members will keep the levels of communication within dyads at a strict minimum, since they operate through obstructive controls similar to rules and standards. Channel members would spontaneously redefine the mission, values, and objectives of their own organization, since they sense a lack of reliable information (Weick 1993). Most importantly, a crisis shifts all internal structures, distorts relationships within the channel, and inherently alters the confidence of members (Shrivastava et al. 1988).

Bovine Spongiform Encephalopathy

BSE developed into an epidemic as a consequence of the intensive farming practice of recycling animal protein in ruminant feed. This practice, unchallenged over decades, proved to be a recipe for disaster. Two hundred years ago, Scottish shepherds observed that their sheep constantly rubbed themselves against fences, trees, and other objects. They named this phenomenon “Scrapie”, otherwise referred to, in scientific circles, as Transmissible Spongiform Encephalopathy (TSE). This is a fatal degenerative disease affecting the central nervous system of sheep and goats. TSE, including the human variant Creutzfeldt-Jakob disease (vCJD), is a devastating disease. It turns the brain to “Swiss cheese” by creating holes in central nervous system (CNS) tissues. As the disease progresses, more and more brain and CNS tissue is affected, so death becomes inevitable. The most familiar TSE is Alzheimer’s disease (Creutzfeld and Jakob worked at Dr. Alzheimer’s institute for brain diseases). Some researchers believe that 5% to 10% of Alzheimer’s disease cases may be in reality misdiagnosed vCJD cases (Johnson and Gibbs 1998).

For the past fifty years, herds displaying these unusual symptoms have been slaughtered. TSE is endemic to most sheep-farming countries, including Canada. Only island countries, such as New Zealand and Australia, have thus far remained immune. In 1986, a veterinarian in the UK reported a cow with symptoms that appeared to be a disorder of the CNS. It transpired that the animal was infected with a new strain of TSE, called Bovine Spongiform Encephalopathy (BSE). Studies concluded that meat-and-bone feed given to cattle was the root cause of BSE. The British beef industry and the British government veterinary authorities, however, countered any negative media coverage about BSE, rejecting the idea that BSE can affect human health (Palmer 1996). Similar to TSE in sheep, no scientific evidence existed that would suggest that BSE can harm consumers. Scientific knowledge was deficient concerning BSE and vCJD, and parties involved were making decisions without having all the evidence.

The British BSE Crisis

In July 1988, a ruminant-to-ruminant feed ban was imposed in the U.K. in order to decrease the number of BSE cases. This crucial step was instrumental in controlling BSE, but its result was not felt for five years, the mean incubation period of BSE

(Berry 1999). These measures included a series of control bans of the inclusion of meat and bone meal (derived from ruminant), and the destruction of all BSE-suspected carcasses. More preventative measures were taken in November 1989, such as the removal and disposal of specified bovine offal (SBO) parts of the carcass that were most likely to contain infected tissues. These measures were to protect consumers and trading partners. During 1993, the incidence of BSE cases in Britain rose to 30,000 (Brown 1998). Because of loose parliamentary and industrial guidelines, the U.K. permitted the export of contaminated meat-and-bone feed around the world.

By 1995, 118 million cattle and calves were on British farms, with 56% derived from dairy herds. 436 abattoirs were involved in slaughtering cattle in Britain, killing 3 million cattle a year, countervailing efforts to maintain a strategy that was export oriented. The 10 biggest abattoirs were slaughtering 36% of all beef in Britain. The abattoir industry in Britain has had recurring profitability problems, and it is generally decentralized. It was known to be administratively disorganized. It was also believed to be over capacitated; over 50% percent of all beef was processed in multi-species plants (hogs and sheep) (Smith, Young, and Gibson 1999). Over 250 active animal auction markets supplied the abattoirs in a live animal supply system, which was also made up of many livestock transport companies. No control or traceability measures were employed (Mousdavi et al. 2002).

The retail sector in Britain, on the other hand, was, and still is, dominated by large supermarkets, which account for over 60% of all beef sales. Many independent butchers (11,500) located in small rural agglomerations account for 29% of sales, and the rest were made by freezer centers and other retail stores. As many as 510,000 people were employed by the British beef industry in 1995. In December 1995, however, the media uncovered gaps in the integrity of the control of the bans on specified bovine offal. Domestic consumer demand for beef products started to decline during the 1995 Christmas holidays. BSE cases started appearing in other countries in the European Union, starting with France and Ireland and progressing to almost every other country in Europe. The British industry showed optimism during the first months of 1996, as did many other nations throughout the industrialized world, blaming the sudden decline of beef consumption on marketing scarcity, as consumer's behaviour, lifestyle, and tastes changed, (Spriggs and al. 2001). Other meats, such as pork and chicken, perceived as somewhat leaner meats, gained market shares over bovine meat cuts. Consequently, the beef industry battled back by investing in product development (Cohen 1998).

By 1996, despite the steady decline in beef consumption, the British beef industry was worth about 4,000 million pounds a year, as 900,000 tons of beef was consumed in Britain alone. The British beef industry continued its unique and unprecedented growth. Exports also soared 45% from 1986 to 1996, most of the increase being related to an abrupt increase in exports to the European Union. By March 1996,

333,500 farms had had at least one case of BSE detected, and 161,000 cases were confirmed. A collective unease was settling in the beef industry. The hardships of 1996 led to the extermination of vast herds of cattle, trade hostility in Europe, and the public expenditure of over \$10 billion CAD. Governmental authorities denied any verifiable direct human deaths (Andrews et al. 2003). The rapid increase of the BSE fright in Britain did nothing to help create a common industry front. Even before the spectre of BSE, the industry was torn by problematic, sometimes incompatible, brand images and information sources concerning both intra-industry trade and consumer communications (Smith, Young and Gibson 1999).

On “Black Wednesday,” the British Secretary of State of Health announced that a possible link existed between BSE and vCJD, thus creating uncertainty for consumers. Even though the British government believed that the risks posed by BSE to humans were remote and felt that they had not lied to the public, the public felt that they had been betrayed. Retail sales of beef products in the two weeks after March 20th 1996 fell in excess of 33%, and continued to fall over the following month. This illustrates the preliminary impact of the fright on purchasing behaviour of British consumers (Smith, Young, and Gibson 1999). Massive media coverage about the lack of information, and what the announcement really meant for food and public safety, overtook the political agenda of the British beef industry. Other countries around the world, including Canada and members of the EU, also banned imports of British beef products. Major restaurant chains like McDonald’s and Burger King saw their sales decline (Brown 1998). By March 28, the beef industry banned all cattle over 30 months from entering the human food chain. They also banned the manufacture of animal feed with mammalian meat and bone meal.

Media hype grew around the world. Many newspapers speculated that the British beef industry was going through a complete meltdown, as the price of British cattle on world markets tumbled by over 25%. By the end of May 1996, 36,000 workers had reportedly lost their jobs (Nestle 2003). After 4 weeks, decline in consumer demand was felt throughout the EU: Italy reported a 50% drop, Germany 40%, and France 30%. Many cattle producers faced difficult financial situations. Thus, the industry started to plead for financial assistance from the British government, even though the beef industry was founded capitalistic aspirations. Direct aid by the British government was eventually rendered on the order of approximately 118 million pounds a year for three years (Smith, Young, and Gibson 1999). These funds were to compensate the industry for the elimination of 300,000 to 400,000 cattle slaughtered as a preventive measure (Ministry of Agriculture, Fisheries and Food and the Intervention board 1998).

Thirty million pounds was given in emergency aid to slaughterhouses, of which some would pay for more hygienic inspections and tighter specified bovine material (SMB) regulations. An extra 80 million pounds of funds was available for

unalienable stocks. Many other members along the food chain lobbied the government for financial aid but without success (Golan 1999).

By June 1996, the new policy of banning cattle over 30 months was implemented but with numerous operational and strategic problems. The total cost for the removal of all cattle over the age of 30 months was 550 million pounds. By October 1996, as many as 700,000 cattle were slaughtered, and farmers were still complaining about the backlog of animals awaiting slaughter. Prices for cattle for farmers settled at 20% below pre-crisis prices in October 1996. Prices did not fall further because of government intervention by both the British Government and the European Union. On June 21, during a summit in Florence, the EU agreed to a framework that would gradually lift the export ban but without any timeframes. Under the proposed framework, the following preconditions would apply:

1. Implementation of a selective slaughter program for cattle most at risk from BSE.
2. Introduction of an animal identification program to track the spread of potentially infected cattle during future BSE crises.
3. Removal of remaining meat and bone feed for cattle.
4. Increase in the number of the 30-month slaughter scheme.
5. Increase in the number of control checkpoints.

Once the framework was adopted, Britain moved quickly to implement an identification program, with passports for animals born after July 1, 1996. Farmers in Britain resisted the desired changes even though the program contained a sufficient amount of financial compensation. In August 1996, the British government announced a mature beef assurance scheme for all farmers with BSE-free herds. This policy would allow them to sell cattle older than 30 months. At that point, most British officials involved with the crisis still believed that the situation was temporary (Lobstein 2001). In fact, Britain legally challenged the European Union on the embargo against British beef, but the case was dismissed.

In July 1996, scientific evidence showed that BSE could mutate from sheep to cattle and vice versa, thus creating a new whirlwind of destructive media coverage on the industry. Consumer demand remained quite sensitive to both negative and positive scientific opinions and findings regarding BSE and vCJD.

The BSE crisis in Britain resulted in many unwarranted changes to supply structure, involving reduction in the availability of beef cattle, although the market had an oversupply of beef. Imports declined, since prices relative to the domestic commodity prices increased. This had a direct effect on beef prices throughout the European Union. The challenge that the British beef industry faced in re-establishing consumer confidence was not met by enhancement of marketing strategies alone. It had to implement radical changes in its processes, food safety

policies, and traceability programs.

In the last decade, BSE has become a global food safety issue. Although many scientists originally expected the number of detected cases of vCJD to be in the thousands, only about 150 cases of the disease have been positively diagnosed around the world, between October 1996 and December 2003. Table 1 presents a case study of the British BSE crisis, considering the socio-political structures and processes of the British beef industry and based on the concepts developed in crisis management and marketing channel literature (Ministry of Agriculture, Fisheries and Food and the Intervention board 2001).

Table 1: The British BSE Crisis Case Study and Detected Concepts

Conceptual Elements of a Crisis	Managerial Aspects	Case Study: British BSE Crisis	Detected Concepts from Case Study
<i>Environmental Uncertainty</i>			
Environmental uncertainty (Lagadec 1991, Grewal and Tansuhaj 2001)	Demand and technological uncertainty	Unreliable control system and embargos issued by many countries	Uncertainty
Difficulty in estimating the consequences of actions (Weick 1993)	Difficulty in evaluating goals and deadlines	No clear timeframe established by British government and EU	Uncertainty
<i>Socio-Political Structure</i>			
The internal system of an industry is entirely affected, thus creating internal uncertainty (Weick 1988, Roux-Dufort 2000)	Confusion and dysfunctional sense-making	Confusion in food safety measures and policies between Britain and EU	Power distribution, dependency, and conflict
Systemic apprehension by the industry (Hurst 1995)	Doubts on organization culture, values	Quality of British beef products in doubt	Dependency
Single-loop learning (Bateson 1972, Pauchant and Mitroff 1992)	Blockage in learning and cognitive process	Denial and resistance from beef industry	Power and conflict
Fundamental principles of implicated subjects	Redefining the mission and values	Exporting goals were revised, more focused on	Dependency

are questioned, altered
(O'Connor and Wolfe 1991,
Pauchant and Mitroff 1995)

domestic demand

Lack of awareness
and systemic consciousness
(Weick 1988)

Enhanced demands
on sense-making

Lack of sensitivity
towards consumer

Power and
dependency

Linearity
(Mitroff and
Shrivastava 1987)

No systemic approach
to problem-solving

Even a capitalistic
industry, like the
British beef industry,
demanded money
from the British government

Dependency

Inaccuracy in judgment
(Roux-Dufort 2000)

Difficulty in estimating
consequences of actions

Gaps in the integrity
of implemented
control measures

Power

Mutual accusation within
an industry
(Elliott, Smith and
McGuinness 2000)

Seeking scapegoats
for the cause of the crisis

Farmers blamed
abattoirs, meat packers, and
government for failed system

Dependency
and conflict

Socio-Political Process

No active mechanisms
within an industry can be
employed to regain
its former condition,
processes or structure
(Roux-Dufort 2000)

No recognized
methods during a crisis

No immediate action
was taken by the industry
after March 20, 1996

Coordination and
cooperation

Relational discontent
(Pearson and Clair 1998)

Loss of identity and incoherent
behavior

Quarrel within
dyadic relationships,
notably between farmers
and abattoirs

Conflict

Rupture between traditional
managerial practices
and anchored paradigms
(Lagadec 1991)

Short-term vision
of decision makers

Industry focused
on short-term objectives

Coordination and
cooperation

Avoidance and denial
(Weick 1993)

No acceptance of responsibility

Beef industry
countered all media
hype on BSE

Conflict

Conformity to regular procedures and decisional inertia (Perrow 1984, Day 1994, Grewal and Tansuhaj 2001)	Decision-making capacity disrupted	Beef industry expressed decisional hesitance	Cooperation and coordination
Lack of communication and information (Weick 1993)	Little communication within dyads	No communication between farmers, packers, and distributors; lack of information on BSE and vCJD	Conflict and cooperation
Lack of trust (Shrivastava and al. 1988)	Altered confidence of members	No evidence of trust between channel members, government, and consumers	Conflict

The Canadian BSE Crisis

Genealogy of a Crisis

The end of the American civil war in 1865 brought food shortages to the aboriginal peoples of the North American plains. The bison herds upon which they had depended were being eradicated. To help meet the demand for meat, the United States contracted cattle producers to push large herds of Texas longhorn cattle north towards Western Canada. This marked the beginning of the Canadian cattle industry. The large regions of grazing land attracted foreign investment, and the western prairies were rapidly occupied. However, the prairies then opened up to homesteading. Most farmers owned only a few head of cattle and horses, kept primarily for work and basic needs. Energy and money went into the production of wheat rather than beef. By the end of the 1930s, tractor power began to replace animal power. In the years that followed, this resulted in the increased availability of feed grains, particularly barley. Beef cattle became an important part of mixed grain farms, and Canadian cattle numbers in the West increased from 3 million to 9 million between 1940 and 1975 (Agriculture and Agri-Food Canada 2002a).

During the 1950s, the use of corn silage enabled central and eastern Canadian producers to finish cattle more economically than their western counterparts, whose cattle were still being finished on range. Improved economic conditions and the ready supply of western calves for finishing enabled a large feedlot industry to develop in eastern Canada (Agriculture and Agri-Food Canada 2002b).

Climate, availability of coarse feed grains, and improved marketing and transportation alternatives led to the prominent feedlot industry in the early 1970s. Today, the Canadian beef industry is an integral part of the Canadian economic mosaic (Cattleman Association of Canada 2003). In terms of food-safety policy measures, the same ruminant-to-ruminant feed ban implemented in Britain in 1988 was imposed in Canada in 1997. This was later upgraded to a mammalian-ruminant feed ban. Up until 2003, the only BSE case found in North America was in 1993 in a cow from the UK. To our knowledge, no other public policy linked to food safety for cattle was adopted prior to 2003.

Canada is known to be a country of agricultural production surpluses. The Canadian beef industry, which generated \$7 billion CAD in revenues in 2002, has always been perceived as producing a high quality commodity on global markets. In 2002, beef and cattle imports in Canada were valued at \$1 billion CAD, whereas exports of beef and beef related products to all countries were estimated at \$4 billion CAD (Agriculture and Agri-food Canada, 2002c), almost 85% of which were exported to the United States. This makes the industry predominantly dependent on its international trading partners, particularly the United States and Japan.

The Clinching Event and Analysis

On January 30, 2003, a six-year-old Angus cow in the Canadian province of Alberta, sent for slaughter at a provincially-licensed meat packer (provincially-licensed packers cannot export their products), was initially diagnosed as having pneumonia and was put down before entering the food chain. Unfortunately, it was not until May 16, 2003 that the sample was tested and found positive for BSE. The diagnosis was confirmed again by the CFIA and at the U.K. Weybridge veterinary laboratory (Duschesne 2003). On May 20, 2003, the CFIA had to announce its first-ever native BSE case to the world, thus igniting an industry-wide crisis. Exports of Canadian beef and cattle were immediately affected. Non-tariff trade barriers were enacted across the world (Canadian Press 2003a). Most importantly, the United States shut down its borders to Canadian beef. Within hours, many other countries, including Japan, Mexico, and Thailand followed suit. The CFIA immediately started its investigation. It destroyed and tested 2,700 cattle in Western Canada (Canadian Press 2003b). Although no other cases of BSE were found, the Canadian beef industry had lost access to its major markets.

May 20, 2003, is considered to be the clinching event of the Canadian mad cow crisis, equivalent to the “Black Wednesday” of the British crisis noted earlier (Roux-Dufort 2000). Some scholars would consider it the founding act (Pauchant and Mitroff 1995). The founding act triggers the crisis, and it is actually an artefact of a total breakdown in the collective sense-making of the marketing channel (Pearson and Clair 1998).

In reality, the first Canadian domestic case of BSE was detected in a British-born cow in 1993, three years before the 1996 British report that linked BSE to vCJD, consequently drawing very little public attention. Since then, food safety concerns have influenced economic and political policies employed by regulative institutions around the world. Additionally, most countries have opened up their markets to increase trade with their international partners. Political and economic alliances between countries in Europe, North and South America, and Asia and the creation of the World Trade Organization have remodeled the premises of international commercialization (Buzby 2003).

In Canada, after the first native case of BSE was diagnosed, the sentiment of helplessness and distress led the way to increased trading disturbance, uncertainty, and power disequilibria inside the beef-marketing channel (El-Ansery and Stern 1972). Several beef producers have blamed food manufacturers and distributors for not stimulating beef demand by decreasing retail prices of beef products offered to consumers on the domestic market. In addition, many observers have argued that financial compensations from public funds given to beef producers have been disproportionate. Unquestionably, many political clashes and setbacks between partners within the marketing channel have transpired since the crisis started in May 2003.

This industry-wide crisis was initiated by the embargo issued against Canadian beef related products by many of Canada's foremost international trading partners. Their decisions transformed inter-organizational relationships within the Canadian beef-marketing channel. As such, these circumstances created uncertainty that flawed the decision-making capacity of channel members within the Canadian beef industry. Observable variables from the Canadian BSE crisis led us to believe that economic and socio-political forces are capable of redefining power and dependence-relation conditions within food marketing channels. Recent international trading agreements and global food safety concerns have proliferated external political forces. The influx of agreements and trading regulatory agencies has utterly changed the geo-political symmetry between nations. Before the Canadian BSE crisis, food insufficiency weakened the power of countries that were not able to produce an abundance of food supplies. Nowadays, international trading agreements have enhanced interdependency among nations and have made supplying countries, like Canada, rather dependent on foreign markets to absorb excess commodity surpluses and food products. When embargos were issued against Canadian beef across the world, its selling price dwindled dramatically, and disturbed the Canadian beef industry's inner socio-political structure, creating enhanced uncertainty for channel members.

During the Canadian BSE crisis, channel members were desperate to resolve the issue as quickly and thoroughly as possible. The patterns of behavior of several key agencies related to the Canadian beef industry were predictable. Channel members

settled for the use of ineffective defense mechanisms. Blocking the learning process, managers often appeared unable to deal with the emotional, informational, and cognitive aspects of the threat of the crisis events (Lagadec 2001). By refusing to consider their own vulnerability, uncertainty was increased throughout the marketing channel, eliminating all odds of establishing any long-term structural and mechanical changes to the industry. As a result, the Canadian beef industry has been the focus of intense scrutiny and action by both public and private institutions in order to reassure consumers and restore lost markets. Knowing that events similar to the BSE crisis may perhaps happen again, many institutions in the industry wonder how an industry-wide crisis can be appropriately managed in the future.

At first, many channel members, including regulatory institutions, stated that the BSE-infected cow was an isolated incident, and that the media had inflated the entire affair (Canadian Press 2003d, Canadian Press 2003e). Meanwhile, producers asked several levels of government for financial compensation, politicians blamed other agencies and jurisdictions, and many other actions were taken by channel members to immediately improve their strategic situations without considering long-term implications (Canadian Press 2003f, Canadian Press 2003g).

The core purpose of the factual approach, as suggested by Roux-Dufort (2000), is to return to the status quo as soon as possible (Morin 1976). The uncertainty created by the crisis will automatically activate defense mechanisms that prevent channel members from investing energy into learning (Pauchant and Mitroff 1992). The sole BSE diagnosis on May 20 that triggered the crisis is actually an artifact of a total breakdown in collective sense-making of the marketing channel (Pearson and Clair 1998). With the process approach presented by Roux-Dufort (2000), crises are part of a normal progression of managing the environmental reality of a marketing channel. This progression will ultimately lead to learning and ultimately to the better management of future crises. The failure of the Canadian beef-marketing channel to understand and mend the crisis by adapting its processes can be translated into an inability of the marketing channel to suitably learn. Even though a crisis often has many unpredictable elements, the process approach, in all probability, will enable a marketing channel to prevent upcoming crises. The reality of today's increasingly complex markets is that crises are inherent to marketing channels, being rare but inevitable occurrences. Perrow (1984), as mentioned earlier, supports the customary facet of a crisis. The enhanced complexity of systems and the coupling of activities generate interactive complexity. The Canadian beef industry has built itself a worthy reputation for producing world-class products. In order to do so, channel members had to increase productivity, profitability, and exports, thus crafting a complex system to respond to environmental constraints. To evolve in a crisis framework, a marketing channel needs to consider the interests of its environment (Pearson and Mitroff 1993). The coupling of activities with the American beef-marketing channel made the situation

even more complex. Increasingly, many marketing channels are becoming interdependent upon one another, thus boosting crisis occurrence probabilities. This crisis affects more than just a single channel member. Some channel members were positively affected and others negatively affected.

The Canadian BSE crisis is quite complex, given that it requires the mobilization of many channel members to restore this abrupt managerial setback. However, unmanaged or inappropriately managed channel member interdependence can and will obstruct crisis management efforts, akin to what many observers believe to have seen during the BSE crisis in Canada (Pearson and Clair 1998). It needs a change in systemic paradigms, the fourth and highest level of learning, to properly evaluate risk perception of trading partners. This is a very difficult chore for an entire channel to promptly grasp, and thus blocks learning (Pauchant and Mitroff 1995, Simon and Pauchant 2000, Elliott, Smith and McGuinness 2000). The cognitive frames of reference involve change if the channel members want to apply their market orientation strategy (Roux-Dufort 2000). The processual approach to crisis management supported by many scholars and experts can overcome many managerial limitations throughout a crisis, but it did not occur in the first year of the Canadian BSE crisis.

In the months following the start of the crisis, the Canadian federal government and many provincial jurisdictions announced programs that would financially compensate farmers and manufacturers for their losses in profits. Funding demands by cattle producers went on for months, as financial compensation programs exceeded a combined amount of over \$3 billion USD within the first year of the crisis.

Paradigmatic Learning

Britain and Canada

Britain and Canada have legislative systems that orbit around an elected parliament. Therefore, a comparative analysis between these countries is not trivial. The legislative processes and structures of both countries are quite similar. By looking at the case study of the British BSE crisis, one might conclude that, seven years later, history has repeated itself in Canada. However, before comparing similarities, there is one focal distinction between the two events. The British crisis was sparked by public health concerns. "Black Wednesday," the founding act of the crisis, created uncertainty with the specter of having a worldwide BSE quandary and vCJD pandemic. The BSE problem was most likely more widespread in Britain than in Canada. Hence, public trust towards the beef industry and its offerings was severely affected by the British crisis. Conversely, the Canadian BSE crisis was driven by international trade quarrels when Canadian trading partners issued embargoes on Canadian beef, based on food safety concerns. Unlike in Britain and

other countries around the world, Canada's domestic demand did not decrease due to the BSE scare (Pennings, Wansink, and Meulenberg 2002). There were no indications, at least during the first few months of the crisis, that the public trust in Canadian beef oscillated significantly.

Many questions were, however, left unanswered during the crisis. The media coverage and its influence were forceful, as marketing members used the information broadcast during the crisis to sway public opinion. Mainly driven by how the media covered the ordeal, collective grief gave way to fatalism. Nonetheless, the media is hardly to be blamed for this, as most modern prospective strategists have to regard media as a major stakeholder for any industry, particularly for agribusiness. The crisis attracted the attention of many public and private institutions, adding to the prominence of the investigations by the CFIA, by different provincial jurisdictions, and by public policy makers. Many BSE-free countries that are net exporters of beef commodities have gained from Canada's misfortune, notably Australia, New Zealand, and Brazil (CANFAX 2004).

A crisis will commonly create victims, and undoubtedly farmers and all organizations that revolve around farming have lost a great deal. Some channel members were in fact angered that the United States and other countries had kept their respective borders closed to Canadian beef products. Most felt this way since none of the 2,700 tested cattle that were examined tested positive for BSE, meaning that the one single case should have been considered as an isolated event with no scientific grounds for keeping the borders closed (Canadian Press 2003c, Richer 2003, Weber 2003). They also experienced a sudden critical financial situation, leaving many channel members compelled to ask for financial compensation from all levels of government (Monchuk 2003). Thus, in 2003, the Canadian beef industry was faced with uncertainty and felt vulnerable. With this crisis, the Canadian beef channel members realized, to their dismay, that its management practices were too confined, favoring mass production and exports (Pauchant and Mitroff 2002). It was a collective and implicit choice by the industry that by design brought imperceptible dependency and vulnerability. Before the crisis, profitability had always been its main concern. Observers also suggest that the crisis that hit the Canadian cattle industry could have been prevented, since the cause of BSE itself was human-induced. The industry could have learned from the British BSE crisis and implemented fundamental changes. Some would argue that some changes were implemented, but they were far from paradigmatic.

No Change

The first and only significant change in Canada, before 2003, was the ban of the practice of rendering ruminants for cattle feed in Canada in 1997. However, ruminant feed is still readily available on the market, and violations of the ban were reported. The enforcement of the feed ban has consequently been challenging

for regulators. The post-May 20, 2003 era brought other slight changes. For one, Agribusiness Canada and Health Canada prohibited the sale or import for sale of food products containing specified risk material (SRM) under the Food and Drug Regulations from countries that are not BSE-free on July 24, 2003. SRM are defined as the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord, and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older.

BSE testing also became a concern in the post-May 20, 2003 era. The CFIA significantly increased its sampling for testing for BSE. In 2005, the set target for BSE testing is 30,000, which is still considered by many observers to be very low, considering that Canada slaughters well over 3 million head every year. By testing less than 1% of all slaughtered beef in Canada, a few positive cases are bound to fall through the cracks and can create yet another excuse for any country to issue a new embargo on Canadian products.

Throughout the Canadian BSE crisis, the CFIA tended to make unfounded assumptions regarding the disease itself. Some of the agency's leading veterinarians mentioned time and time again that animals could not develop the disease under the age of 30 months. In Japan, which has discovered over 20 cases of BSE since 2001 and where BSE testing is compulsory, two of the country's mad cow cases were in 21-month-old and 23-month-old animals, which breaks a very significant paradigmatic standard for food safety policies. Evidently, the scientific knowledge that is used as a foundation for current public policies on food safety is weak.

It is clear that, based on a conceptual analysis of the situation, there are many reasons to believe that the Canadian beef industry and government did not learn from the unfortunate events that occurred in Britain in 1996, even if some stakeholders believed that it had. What has been gained, though, is that the Canadian government has learned how to cope with political uncertainty and drive the political agenda with scientific-based facts. In the early months of the crisis, both the CFIA and the Canadian federal government were politically obsessed with transparency and the will to return to the status quo as quickly as possible. In the process, they tried to manage uncontrollable variables, since the embargo was issued by political jurisdictions that Canadian authorities had no power over. While most stakeholders of the beef industry were focused on short-term repercussions of the crisis, the structure in which the industry operates remained unchanged. In Britain, the BSE crisis eventually led to the creation of the Food Standard Agency (FSA) in 2000. The Food Standards Agency is an independent food safety watchdog set up by an Act of the British Parliament to protect the public's health and consumer interests in relation to food. The CFIA's mandate somewhat differs from the one followed by the FSA. The FSA is led by a board that has been appointed to explicitly act in the public interest and not to represent particular sectors, unlike the CFIA.

Although the CFIA historically has focused its expertise on public health related issues, it also has the mandate to protect the industry's interests to a degree. During the BSE crisis, CFIA's representatives with staff from Agribusiness Canada lobbied to convince the American government to reopen borders to Canadian cattle and beef. The CFIA has proven through the BSE ordeal that it does not have the legitimacy and power to deal with international trade issues. When Britain was hit by its BSE crisis, it had to comply with strict European Union rules on food safety and was asked to provide more accurate and reliable information to allow better trade flow between European nations. An integrated approach was required to enhance exports with trading partners mostly located within Europe. Canada, and the United States for that matter, have never been exposed to such market dynamics pertaining food safety, and the necessity to divorce public and industry concerns on food safety policies was inexistent until now. As a result, an equivalent to the FSA in Canada or the United States does not exist. The Canadian architecture for food safety policy-making is legislatively inept. Even though the BSE crisis in Britain brought visceral changes to government, including the creation of new agencies and the shift of new responsibilities before 2000, Canada never made the necessary changes prior to 2003. This, however, can apply to any given nation that trades agricultural commodities internationally. Partners need to present a certain level of willingness to comply with continental food safety standards, even though legislative structures between nation-partners are fundamentally different (i.e. Canada with a parliamentary system that centralizes institutional power, contrary to the presidential system in the United States).

Public Policy Implications

Food Safety and Trades

BSE, foot and mouth and other occurrences have shown that much food safety related policy-making, whether of it is explicit or implicit, seems to lack a cohesive direction. The emergence of complex diseases in the food chain around the world has made food-safety policy-making procedures multifarious. Certainly, trade policies have influenced public policies on food safety, but science has developed faster than such policies or the managerial capacity of national regulators to overlook food safety measures, which makes any BSE crisis a socio-technological disaster (Denis 1993). Most countries would base their food safety decisions on a risk analysis approach, but this approach can vary. This may explain the reasoning behind the embargos issued by many countries on Canadian beef despite the amount of scientific evidence showing that the product is safe to eat (Phillips 2001).

Food policy-making is essentially a socio-political process, and not just a political one. Most industries are in a productionist paradigm, focusing mainly on output and trades, and fail to synchronize production and consumption (Lang and

Heasman 2004). Many agricultural public policies around the world currently concur with this paradigm. Most of all, food safety policies and regulatory systems heavily depend on the food system and the private sector for information, advancements in technology, and sharing and processing of data. The private sector has shown some degree of initiative by adopting programs such as the Hazardous Analysis of Crisis and Critical Point (HACCP). Most nations now rely on other nations for food variety and food supply (FSA 2002). The dynamics of the industry as a whole have utterly changed, resulting in the possibility that more crises may possibly occur in the future.

On the international scene, there are significant differences between nations and governmental authorities when it comes to food safety policies, particularly when it involves cases such as trading of livestock between Canada, the United States, and Japan. In many countries, the politically charged food safety arena is now masterfully controlled by jurists and lobby groups, and there are historical reasons for this. In the 1980s and 1990s, governments around the world were significantly less interventionist with respect to public policies on food supplies, letting the market determine the direction of change and distribution. This ideology quickly shifted when food safety concerns began rising around the world. The governmental structures of many countries were not prepared for this new direction. Regulators are often in conflicts of interest or are perceived to have dual roles. For instance, in the United States, the federal Department of Agriculture's unwillingness to change food safety policies derives from conflicting mandates: on the one hand, they are tasked to provide safe and quality foods to the American consumer and on the other hand, their job is to promote consumption and marketing of American-made commodities. Canada has a similar predicament. Habitually, the department related to agriculture has had that responsibility, even when such a responsibility would arguably better fit the overall assignment of a health department. Expanded information, shared accountability, and cost involvement are issues that have triggered many debates within food safety and supply chains. For these and other reasons, food safety issues have become a premise for conflicts between governmental departments and supply chain members within and between countries. Around the world, food safety is a multifaceted and political issue, and many countries are adopting protectionist measures in order to cope with market uncertainty. Science and risk management practices are less important than policymakers.

Politics is, and always has been, an integral part of food safety policy, and the methods used by both governmental authorities and industry to cope with the BSE crisis is a sign that an adjustment of strategic paradigms was called for. Beneath the politics and conflict of international food safety, there is, in theory, one simple solution amongst others to safeguard our food chain and minimizing risks for our foreign customers: a transversal food traceability system that will track the meat we eat from the producer to the consumer, from its origin to our plate (Spriggs et al.

2003). Unfortunately, the practical application of this solution has some significant problems. In government or in the industry, such a policy has often been conceived in a sectoral manner and what is required now is the integration of sectoral interests in our policy framework for an efficient food traceability system. The costs are difficult to evaluate, and, for agri-food businesses, the lack of longitudinal vision has caused certain ambiguities. Consequently, agri-food businesses facing this collective project have concluded that they do not have sufficient financial resources to support such an endeavor. Most agri-businesses agree that the government should assume all financial and social burdens arising from such a project. However, regardless of who pays for it, the implementation of a rigorous traceability system has become a fundamental need, and the capacity of the beef industry to adjust to these new realities is an incontrovertible requirement in the adoption of new technologies.

Government and industrial authorities must find ways to modify the very structure of the beef industry in order to facilitate the implementation of an efficient food safety framework and food traceability system. Without such a system, the Canadian beef industry remains vulnerable to the politics and lobbying of the international food safety arena, as it would for other countries experiencing similar situations. To establish this system within the Canadian beef industry, certain paradigms must change. In spite of laudable efforts, the beef industry needs to adjust to new global realities and modern consumers' needs and perspectives. This new approach should lead to the emergence of national branding strategies, thus focusing on food quality and country of origin labeling. The tactical efforts that have been witnessed over the last 10 years in this regard will have to take on a universal, strategic and inclusive agenda that combines all futurist paradigms of the industry into one. The productionist paradigm that currently overrules all other approaches will eventually become obsolete.

For any given nation, regarding future food safety procedures, food strategists will have to accept that domestic and foreign food safety policies are slowly becoming one. This does not necessarily mean that all standards between nations will become one and the same. It is very unlikely that the world will ever apply homogenous food safety standards, as food safety policymaking is, in essence, a politically charged process. Food marketing strategists would have to consider the most rigorous of standards amid aimed markets as being the model under which they should operate. Food traceability systems and standards will have to comply with this new global reality, and it is up to food strategist and policy-makers alike to drive this agenda.

As well, the North American legislative dynamics in which Canada has to operate is somewhat different than the one observed in Europe. Only three countries are part of the North American political landscape, one of which is considered by many nations as the world's only superpower. Because of trade ambiguity and distortion,

standardization and normalization of food safety policies between countries are often governed by the most powerful political entity. Observations made during the Canadian BSE crisis suggest that United States drives the food safety policy schema for the North American continent. Europe encompasses many countries that have acquired economic power over the years. France, Germany and the United Kingdom are forced to compromise due to economical countervailing.

Risk Communication

On the communications front, the CFIA astutely rationalized the debate by reassuring the public that the likelihood of multiple cases in the same birth cohort is rare in Canada, and consumers are exposed to very little risk when it comes to contracting the Creutzfeldt-Jakob disease, the human variant of Mad Cow. Unlike in Britain, where government officials tried to control consumer apprehensions in the mid-1990's during its mad cow episode, the CFIA tackled its mad cow scare by managing inherent real risks of the disease and by means of a science-based dialogue with the public. Judicious, maybe, but its communication strategy became a double-edged sword.

The critical task of communicating intrinsic risks to consumers is not only to share scientific facts, but also to manage systemic uncertainty that comes with the territory. During the BSE crisis, the CFIA has shown its intolerance to ambiguous situations. It seemed to have perceived ambiguous situations as sources of threat as it bombarded consumers with methodologically amassed information on the status of our food supply. In essence, the CFIA is stretched between two diametrical mandates: protecting the trust of the Canadian public. As public trust is kept at a sound level, information keeps a lid on ambiguity. Still, in an uncertain environment, trust is not a trivial issue. When risk threatens the health of consumers, they demand two basic things from regulatory officials in order to merit trust: protection and the truth. So far, most observers agree that governmental officials have not misled the public since the start of the BSE ordeal, even if uncontrollable variables have hindered their capacity to predict the outcome of certain strategies. Nevertheless, the Canadian beef industry must look at how consumers are actually protected from real risks of contracting Creutzfeldt-Jakob disease.

All of this means that the CFIA is walking a very fine line between educating the public and avoiding unnecessarily alarming the public, with the public's trust in the balance. In order to appropriately protect consumers, more research on BSE is certainly called for, and a provisional policy to make BSE testing mandatory in Canada is indispensable to protecting the very brittle trust the industry has built over the years with both the Canadian public and its trading partners. Of course, to test all carcasses for BSE in Canada is easier said than done, but it is essential, and the CFIA's communications strategy depends on it.

Conclusion

The objective of this paper was to conceptually analyze the events that occurred within both the British and Canadian beef industries by considering them as political economies. Socio-political structures, driven by power and dependency relations, and socio-political processes, driven by cooperation and conflicts within a marketing channel, greatly influenced channel members' behaviors during both the British and Canadian BSE crises. Even though some changes were made, it is clear that, based on the conceptual analysis of the first year following the crisis event, the Canadian beef industry and government did not learn sufficiently from the unfortunate events that occurred in Britain in 1996, even if some Canadian governmental authorities believed it had. Many observers feel that the Canadian BSE crisis could have been prevented. The BSE crisis did incite some methodological amendments, but more fundamental changes are still required.

Based on many surveys over the years, the vast majority of Canadian consumers believe that the Canadian agricultural supply system is not endangering human health, and consumers unconditionally trust the safety of our food chain. It is doubtful that the level of trust will be altered after more discoveries. This trust, however, is subtle and can be obliterated in an instant. In neglecting to nurture consumer confidence with reference to food safety, many industrialized nations, including Japan and Britain, have had to pay a hefty price in regaining the public trust their industries desperately needed to re-establish profitability.

During the BSE episode, cautious optimism prevented Canadian officials from gaining new markets and encouraged them to take on scrupulous strategies that will foster the trust of domestic and international consumers of Canadian beef. There were no rational calculations on cost of regaining trust, which is often much greater than that of implementing pre-emptive measures that would care for both beef consumers and the beef industry itself. Food policy-making is essentially a socio-political process, and the industry will have to make some adjustments when dealing with food safety issues.

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Performance Improvements through Implementation of Lean Practices: A Study of the U.K. Red Meat Industry

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Abstract

'Lean' is an established industrial paradigm with proven track record in various sectors of the industry (Womack & Jones, 1996). World-class Companies such as Toyota (second biggest global car manufacturer), Porsche' (most profitable global OEM), Boeing (largest global aerospace business) and Tesco (third largest global retailer) have adopted Lean at the corporate level. This paper reports on the introduction of 'Lean Thinking' to a new sector – the 'Red Meat Industry' (Food Chain Centre, 2004). This contribution highlights the benefits of lean production techniques in different stages of the red meat value chain and reports 2- 3% potential cost savings at each stage of the chain.

Keywords: Lean process, red meat industry, Takt-time, work standardization

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Introduction

Nearly a hundred years ago Henry Ford drew upon the Chicago slaughterhouses' carcass disassembly (break down) processes to build the world's first assembly flow production line at Highland Park plant, Detroit (Hounshel, 1984: 241). Ford's flow method of production led the global economy into an era of '*production for masses*', away from crafts production techniques (Ibid). The key underpinning characteristics of Ford's system were inter-changeability of assembly parts, inter-changeability of labor, and high degree of vertical integration and control across the supply chain.

The main building block of Ford's system of production for *masses* was the inter-changeability of the assembly parts (a problem which never existed in the disassembly of an animal carcass). In this sense, Ford was indebted to the pioneers of the American System of Production, especially Eli Whitney of Pratt and Whitney Co. (Chandler, 1977). The second most important attribute of *Fordism* was the standardization and fragmentation of all tasks on the shop-floor (Littler, 1985). Jobs at Ford required limited skills and were as interchangeable as the assembly parts. An army of narrowly trained workforce (largely immigrants who barely spoke English and in fact needed not to communicate since tasks were very straightforward) worked in the Ford's plants. Ford incentivised this tightly controlled – unskilled – labor, to vigorously perform these simple repetitive jobs, through higher wages (the famous five dollar day) (Hounshell, 1984: 259). Finally, Henry Ford's dedication for uninterrupted flow of material led him to establish various parts and raw materials supplier plants adjacent to the assembly line. At the River Rouge plant, Ford literally produced everything required to make a car – from oilseed crops to steel mills to power plants (Hounshell, 1984).

Such articulate system of '*production for masses*' well-suited the manufacture of identical Model-T's offering the company the economy of scale which in turn enabled it to constantly lower the prices. Nonetheless, the markets soon became saturated with the monotonous Model-T's and many customers turned to General Motor's automobiles for a perception of individuality, style and quality (Hounshell, 1984: 267). Ironically, the prosperity that '*production for masses*' brought to American society created ever more demanding customers that sought for the customized products of the *flexible mass production* era. Another force that added to Ford's challenge was the emergence of the worker unions, during the 1920's demanding for better life-style in return for their tedious jobs (Hounshell, 1984).

By 1925, GM had yearly model-change policy. At Chevrolet, Khudson – a former chief production engineer at Ford – had devised a relatively flexible production system which – to some extent – accommodated change. Khudson radically departed from Ford Production System by deploying general purpose production machinery as opposed to single purpose machine tools. Although, Khudson stuck with the Ford's idea of sequenced manufacturing line, kept large amounts of

inventory between the work stations to compensate for the changes (Hounshell, 1984: 265). Hence, Chevrolet became the birthplace of what is today known as 'Mass production' and can be characterized with its batch and queue mode and mountains of work-in-progress. Eventually, in 1927, after a significant slump in market shares, Henry Ford, had to succumb to the principles of mass production. GM's marketing creed had triumphed over pure production of Ford (Hounshell, 1984: 267). And so, the smooth flow of identical components evolved into mass production – for many product variants.

Eventually, Toyota resolved this contradiction by developing a flow production system for many product variants and became the birthplace of lean production (Womack *et al*, 1990). According to Mann (2002), powerful business solutions don't accept trade-offs; one Lean philosophy is to eliminate the non-value adding compromise between uninterrupted flow of the process and market-oriented flexible production. Lean production contrasts mass production, by emphasizing the importance of smooth flow, continuous improvement and employee empowerment (Womack & Jones, 1996). This paper explains the various aspects of lean production and reports on introduction of some Lean practices across several Red Meat supply chains. The two basic lean techniques discussed in this paper are Takt-time (Ohno, 1988) which is the basis for smooth continuous production flow, and standardized work (Imai, 1997) which is the basis for continuous improvement.

Literature Review

The UK Red Meat Industry in Context

Agriculture in Europe and North America is heavily supported by government intervention and protected by trade barriers. In Europe, the Common Agricultural Policy (CAP) supports via import tariffs and subsidy payments. Nonetheless, the market trends are towards eradication of the global trade barriers; and following the 'Agenda 2000 Agreement'¹, (CAP-reform), the EC's CAP budget is undergoing major reform. The admission of former Eastern Block states, penetration of cheap meat suppliers (e.g. EU full tariff beef imports increased from 26,000 tonnes to 94,000 tonnes between 2000 and 2004²), and consumer behavioral changes in favor of convenience and organic products challenge the red meat industry across Europe (Gower, 2004). Over and above that, there have been several issues specifically challenging the UK red meat industry, i.e. the BSE³ disease epidemic during the 1990's, outbreak of Foot and Mouth disease in 2000/2001, and concentration of

¹ The Agenda 2000 agreement was agreed upon in Berlin in March 1999. It helps European agriculture to meet the challenges of future trade liberalisation. For more information see: www.defra.gov.uk/farm.

² Source European Commission

³ Bovine Spongy Encephalopathy commonly known as Mad Cow disease

market power in the hands of multiple retailers (in the UK the top four retail chains account for nearly two thirds of the retail meat sales) (Fearne, 1998; Simons *et al*, 2003; Hornibrook & Fearne, 2001; Tarrant, 1998). Support payments in the UK have hitherto been on a headage (per head of livestock) basis; but from January 2005, payments cease on a productivity or headage base. Instead, producers will receive a single-farm payment based on historic claims and/or land area. Pre-2005, in order to secure a headage support payment, producers could make a rational decision to produce animals at a loss against the global prices. The decoupling of the support payments increases producers need to minimize supply costs, and may lead to rapid rationalization of the industry. One of the key solutions, proposed in the literature, for smoothing the process of rationalization in the industry is the pursuit of best available practices and creating a learning environment where companies continuously strive on improvement (Pickernell & Hermyt, 1999; Simons & Zokaei, 2005). Clearly, Lean Thinking is one approach that offers insight into potential opportunities for improvements and best available techniques. Against this background, this paper shows the potential benefits which can be realized through implementation of some Lean practices across the supply chain.

Lean Thinking

The term 'Lean' was first coined by James Womack, Daniel Jones and Daniel Roos in "The Machine that Changed the World" (Womack *et al*, 1990). Lean production is rooted in the Toyota's Production System which turned 'Toyota Motor Corporation' from a small domestic producer in 1950's into one of the world's leading automotive companies in the 1980's. The tenet of 'lean' production is elimination of waste both within the firm and across the supply chain (Womack & Jones, 1996). The notion of waste elimination dates back to the '*Scientific Management*' movement (Taylor, 1914; Gilbreth, 1911) in America and has been the cornerstone of all business paradigms which focus on the productive rationality of capital (being human, financial or manufactured capital). Scientific Management (Taylorism) rationalizes the use of labor-power at the individual worker level – through fragmentation of individual jobs into different tasks and optimization of each (Ibid). Fordism, adopts the rational principles of Taylorism and extends the focus of waste elimination to the whole process (Doray, 1988: 69). The Fordist flow assembly line – for the first time – made it possible to control the quantity of effort required at the individual workstations through setting an average line speed (the factory clock speed). Similarly, *Mass Production* has been defined as a '*ruthless war on waste*' (Filene, 1925: 88). Yet, Lean's definition of waste is quite distinctive from Taylorism, Fordism or that of Mass production. Taiichi Ohno (1988), the father of Toyota Production System, defined Waste (Muda⁴) as any human activity, which absorbs resources but creates no value. Performing a wasteful activity adds no value but incurs cost. Ohno (1988) identifies seven types of Muda: waste from overproduction,

⁴ Muda is Japanese for waste, futility and purposelessness.

waste from waiting inventories, waste from unnecessary transport, waste from waiting times, waste from unnecessary motion (movement of people), waste from unnecessary processes, and waste from defected products.

Both Taylorism and mass production have been criticized for causing '*alienation of the labor*' (Doray, 1988: 116). It is true that there is a degree of '*work abstraction*' (Marx, The Capital) in lean – due to standardization of the work methods and sequence, and not allowing for self-regulation of the work speed. Nonetheless, lean avoids total estrangement of the workers through broadening the scope of jobs, offering task variety, eliminating tight supervision, reducing the need for inspections, and encouraging social interactions in workplace (see Womack and Jones, 1996). Contrary to the 'sword of Damocles' approach of the western auto-manufacturers Toyota empowered employees and guaranteed jobs for life, which in turn allowed Toyota to benefit from full-hearted participation of employees.

Womack and Jones (1996) propose a set of principles for achieving a lean enterprise. Companies should embrace these principles and incorporate them into their operations, sequentially. Integrating these principles into operations entails use of certain tools and techniques. Here, the lean principles are briefly explained and then two lean techniques (Takt-time and operations standardization) are discussed in more depth. The first principle of lean is identification of value from the end-consumer's perspective. The second lean principle (value stream) is identification of product families or services that follow common process paths to the consumer. The third principle of lean is '*flow*' – a single product should continuously flow through value-creating processes without interruptions or intervals. The fourth principle is to only let value flow at the pull of the customer. 'Value flowing at the pull of customer' implies that nothing is produced upstream unless someone down stream demands for it. This is opposite of 'batch and queue' thinking which suggests mass production and large inventories in advance and based on forecasted demand. The last principle of lean production is pursuing perfection continuously. This means that firms should always look for waste and find new forms of it and tackle it. (Womack & Jones, 1996)

Nowadays, companies such as Xerox not only apply the lean principles to their own operations but find substantial benefits in implementing Lean Thinking in their customers' processes (Xerox, 2005).

Lean Transformation in the Agri-business Sector

The Food Value Chain Analysis Approach

At the heart of any lean transformation lies the reengineering of the value chain (being a single firm or part of the supply chain) to implement the principles of '*flow*' and '*pull*' (Womack and Jones, 1996; Rother and Shook, 1999). This paper reports

on part of the findings from an extensive research program, which looked into eight red meat value chains in three countries. The research team deployed an agribusiness specific Lean implementation methodology – the Food Value Chain Analysis (FVCA). The methodology embraces a number of prominent Operations and Supply Chain Management paradigms, namely Value Stream Mapping (Rother and Shook, 1999; Hines and Rich, 1997), Efficient Consumer Response (Seifert, 2003) and Value Chain Analysis (Porter, 1985; Shank and Govindrajana, 1988). Using the FVCA nine chains in three years were studied and – in excess of – forty middle and senior managers from across the supply chain were trained on Lean thinking tools and techniques to apply them in the participating firms.

The notion that key processes across the supply chain form a Value Chain and the method of analyzing the value chain for competitive advantage was introduced by Professor Porter (1985) of Harvard Business School. Subsequently, Value Chain Analysis was developed in the management accounting literature (Shank, 1989; Shank and Govindarajana, 1993; Coopers and Lybrand, 1996) and more recently in the operations management literature (Rainbird, 2004). The Food Value Chain Analysis is a structured method of analyzing the effects of all the core activities on cost and/or differentiation of the value chain; FVCA analyses where in the supply chain the wastes can be reduced or differentiation can be enhanced (Zokaei and Simons, 2005). The essence of this method is generating a systematic map of the value chain and a systematic method of analyzing each strategic activity in relation to the consumer's value (i.e. the first principle of lean thinking). A key attribute of FVCA is that its analysis and metrics are based on determinant attributes such as quality and time, not on financial attributes. The advantages proposed for this approach are that determinants are leading indicators of financial performance, and from a change management perspective determinant measures are more easily shared across company boundaries (Simons et al, 2003).

A Typology of the Lean Elements – Philosophies, Policies and Practices

Based on some previous research (Macduffie, 1995; Macduffie & Pil, 1996; Pil & Macduffie, 1996; Hines 2001), this paper suggests that the success of lean production stems from a combination of practices, policies, and philosophies. Figure 1 demonstrates a typology of lean elements. Successful lean implementation involves amalgamation of various elements from different levels in Figure 1. For example, Just-in-Time inventory management policy and creation of smooth flow go hand in hand while both depend on the introduction of Takt-time in practice. Furthermore, companies which implement single piece flow need to promote the workers' participation policy and pursue continuous improvement philosophy to sustain the flow production system within the organization.

Figure 1 underlines the fact that lean production goes beyond the operational level and links into the overall business philosophy of the organization. That is, lean

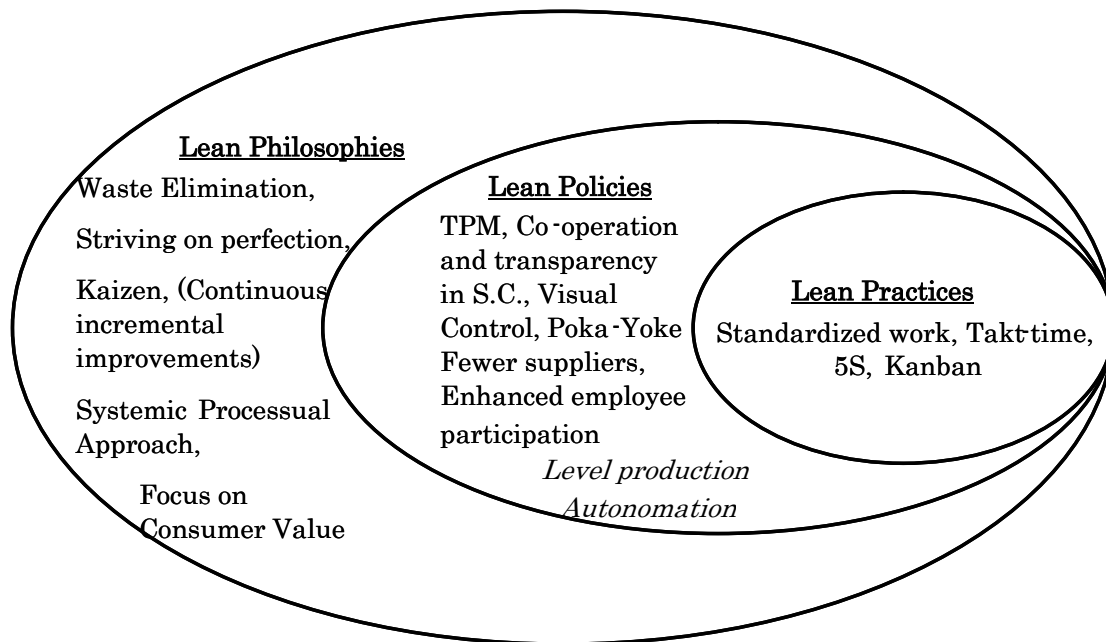


Figure 1: Typology of Lean Elements – Philosophies, Policies and Practices
Adapted from (Simons and Zokaei, 2005)

production is more than just a set of tools and techniques. ‘Lean Thinking’ restores the organizational focus on the real ‘value’ (i.e. value from the customer’s point of view) and aligns all the processes to that end. Nonetheless, the existing paper only focuses on application of lean practices to different stages of the red meat supply chain. The objective of this paper is to appraise the benefits of two lean practices (standardized operations, Takt-time) along the chain, and quantify the potential benefit to all stakeholders.

Takt-Time

The German word ‘Takt’ means precise cycle of time, rhythm or interval; it, also, refers to the conductor’s baton and beat of music. The term ‘Takt’ was first introduced in the German aircraft industry, and subsequently was taken to Japan by the German engineers training Japanese aircraft producers pre-World War II, and later became an integrated element of lean production (Wada, 1995). Takt-time is used to synchronize the rate of the production process with the customer demand in order to prevent the waste of overproduction (Rother and Shook, 1999). Takt is the time elapsed between units of output, when the production rate is synchronized to customer demand. According to Ohno (1988) calculating Takt-time shows when items are needed so that they are produced as required, one-by-one.

The most significant source of Muda (waste) is overproduction, i.e. producing more, sooner or faster than is required by the next process downstream (Rother and Shook, 1999). Overproduction means that resources are tied up in stock rather than being directly devoted to production. Buffer inventories are often costly to store and handle, hinder move from one product design to another and hide production errors. Thus, by avoiding overproduction, Takt is central to lean production.

Takt-time is calculated by dividing the customer demand into available working time per shift. The calculation for Takt-time is as follows:

$$\text{Takt-time} = \frac{\text{Production Time Available}^*}{\text{Customer Demand}^{**}}$$

* Total production time minus breaks, downtime, etc. It includes changeover time. Sometimes regarded as Operational Availability

** Average customer demand over a certain period

When the Takt-time for a process is 30 minutes, it means that the process should produce only one part per 30 minutes. This is totally different from producing 2 parts per hour or 16 parts in an eight-hour shift. This links into one-piece flow production – the third principle of lean production (Miltenberg, 2001). In order to achieve one piece per 30 minutes, each processing step along the production line should precisely perform its task within 30 minutes and pass the work-piece down the process.

The simplicity of the Takt-time concept belies its astonishing effects. Here are some main features of a Takt system.

Increased Productivity through Stabilized Production Flow

Flow production was first introduced in 1913, when Ford Motor Company setup the first flow assembly line for the Magneto assembly process (Hounshell, 1984). This was a major breakthrough in the static mode of assembly and increased productivity by 50% (from twenty man-minutes down to thirteen man-minutes). However, a problem soon occurred: the rate of the work flow was not constant.

Shortly, Ford engineers found that by moving magnetos at a set rate by means of a motorized chain, they could set the pace of work. This resulted in a four fold increase of productivity: five man-minutes compared to the original twenty (Hounshell, 1984). Clearly, the concept of Takt or stabilized flow logically follows from the concept of 'flow'. It has been understood that smoothness and harmony in flow are fundamental to productivity and efficiency (also see the case of aircraft industry and one hour bomber Kidder 1995). The Takt system describes a constant rate of flow.

The production flow, theoretically, can have a constant or a variable rate. A flow line with variable flow rate, for example between 0.75 and 1.25 units per minute on different occasions; but averages 60 units per hour. On the contrary, a constant rate line runs at 1 unit per minute throughout the hour. Operating to a Takt-time means all workstations operate at a constant rate synchronized to the customer demand. By eliminating variability at each step, Takt-time prevents build-ups of inventory between workstations and the stops and starts that occur at a variable flow rate.

Work Balance

Work Balance refers to a situation where all the operators along the production line require the same length of time to perform their tasks. Operating a line to Takt-time is a prerequisite to effective work balance. In an ideal situation, the work content is distributed evenly between workstations in a way to meet the Takt-time (Tapping & Fabrizio, 2001). Figure 2(a) is an illustration of an unbalanced line where cycle-times vary significantly from one process step to another (cycle-time for a work station is the time required from completion of one unit to completion of the next⁵). Operator 4 is pressurized to cut corners in order to finish the job within the

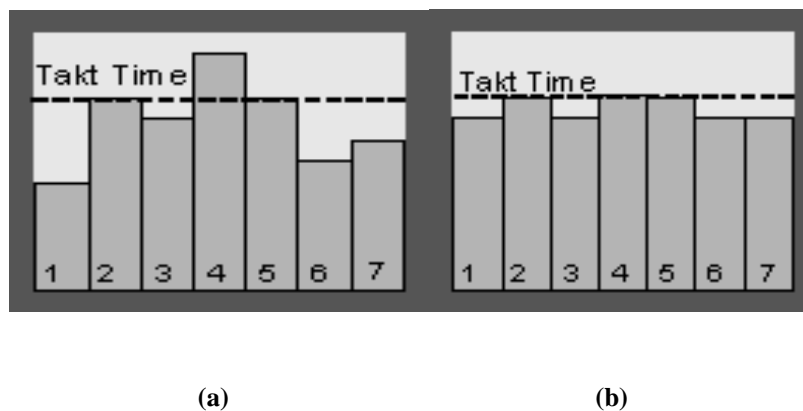


Figure 2(a): In the first illustration (left) the production line cannot make the necessary quantity because operation number 4 exceeds the Takt-time. In the second chart (right), the work has been balanced at Takt-time or slightly below. (Source: Strategos, 2004)

Figure 2(b): This figure illustrates improved balance of the line; work content is nearly balanced and the cycle-times are just below the Takt-time. Line balance creates a situation where individual and team performance can be monitored. This has potential benefits and drawbacks for operators (Babson, 1995). Benefits included good ergonomics and increases morale since everyone works equally hard.

⁵ Cycle time is a measured quantity and takt time is a calculated value.

Takt-time, while operators 1, 6 and 7 drag their heels. Line imbalance potentially impairs the quality, leads to underutilized machinery and people, builds up inventory levels, causes individual frustration, and triggers team dissension.

On the other hand, the rigidity of Takt-time means that operators cannot take informal unscheduled breaks (Delbridge, 1998).

Enhanced Awareness on Performance

Takt-time is displayed on the shop floor, sometimes using electronic devices, which count back from the Takt-time to zero in every cycle. So, production team tracks time and “*everyone can see where production stands at each moment*” (Womack & Jones, 1996). This provides frequent and cyclic feedback on productivity, machine reliability and quality problems, which increases the level of awareness in both workers and management. Such heightened awareness brings great motivation to the team and leads to higher productivity and quality.

Standardized Work Practices

Operations standardization began with the ‘*Scientific Management*’ movement (Taylor, 1914; Gilbreth, 1911) as the first step towards the modern industrial era and as a method of reducing dependency on the skilled workers of the craft production age. According to Imai (1997), work standardization is critical for any improvement and key to success in the Toyota Production System (the same as lean). Standards can be defined as the best way of doing a job (Imai, 1997). Work standardization refers to operational procedures on the shop floor that ensure customer satisfaction i.e. work standards show what, where, when, who and how tasks should be carried out to ensure best results. Standards must be clearly documented and circulated to everyone. A critical differentiation from early work standardization that relied on industrial engineers to set the standard is that – in lean – people on the shop floor must establish work standards and they are responsible for improving those (Tapping & Fabrizio, 2001; Imai, 1997).

Work standards should be maintained in the first place and continuously improved. In fact, standards create the basis for subsequent improvements. Some of the features of standardized work systems are as follows (Imai, 1997):

- Standards represent the best, easiest and safest way to do the job
- Standardized operations provides the basis for continuous improvement
- Performances are measured against the standards
- Standardization is a necessity for training the workforce
- Standardization is key to preservation of organizations’ knowledge base

Methodology

As part of the Red Meat Industry Forum’s Value Chain Analysis Initiative (Simons *et al*, 2003), nine red meat chains were studied using the FVCA method – which involved ten-days of data collection as explained in Figure 3. Multiple – qualitative and quantitative – sources of information are used and results triangulated with data from outside the scope of the nine case studies (Stake, 2000; Yin, 2003). A case study research method (Yin, 2003) is adopted to investigate the implications of lean production within the context of red meat industry. Yin (2003) challenges the traditional concerns over the lack of rigor of case study method, e.g. limitedness and bias. Yin (2003a) argues that the case study method, when systematically designed, is a legitimate method for research.

Day	Event	Methodology
1	Initial Workshop	Lean Concepts and VCA. Principles for benefit sharing. Supply Chain Structure Map. Organization and Communication Map.
2	Workshop Current State	Select Product Current State Map Chain Consider whole carcass
3,4,5	On-site mapping	Farm; abattoir; meat processing plant; sausage manufacturer; distribution centers, retail store Identification of internal operational improvement opportunities at each facility
6	Workshop: Full Chain Future State Map	Future State Map Consumer Value Ideal State Identify Key Performance Indicators
7	Off-site	Consultation framework on strategic opportunities
8	Workshop: Future State	Rationalize Ideal to Future State Link Consumer Value and Key Performance Indicators Identify key projects
9	Prepare Presentation	Firm proposal with project owners, benefit allocations and milestones. Involve Senior Managers pre-presentation
10	Presentation	Joint presentation of recommendation to senior management of all companies Decisions taken as to which improvement projects to progress.

(Adapted from Taylor and Simons 2004)

Figure 3: Development of the Ten-Day Activity Plan

The research question is “*how and why adopting lean practices (i.e. Takt-time and Work Standardization) improve operational performance of red meat supply chains and what are the potential monetary benefits.*”

Operational Data

To establish the operational data the FVCA case study approach was used applying a ten-day program of collaborative data collection (Figure 3) involving senior managers from each of the companies in the chain (Simons et al 2003, Francis, 2004, Taylor and Simons 2004, Simons et al, 2005b). A variety of data collection techniques are used including process activity, demand amplification, quality filter, physical structure, decision point, supply chain response matrix and production variety funnel (Hines and Rich, 1997) and value stream maps (Rother and Shook, 1998).

Monetary Benefits

Performance indicators can be categorized into leading real time indicators (mainly operational) and lagging performance indicators (mainly financial) (Fitzgerald *et al*, 1991). The FVCA methodology focuses on lean operational evaluation but does not include cost/benefit analysis (Zokaei and Simons, 2005). The authors recognize that to analyze the changes, cost/benefit analysis should encompass all economic, societal and environmental impacts and trade-offs (Mishan, 1967, Pearce 1976).

However, various industry observers in the UK expressed interest in understanding the potential internal economic value of improvements to the groups of actors in the whole sector. Lean performance improvements primarily lead to better quality and reduced inventory levels which quickly release resources in terms of people and cash; but only translate into bottom-line benefits in long-term. A common strategy for lean adopters is to grow their businesses and to build on the improvements that aren't immediately reflected on the balance sheet (e.g. strong brand and released human resources that should not be laid off) rather than just focusing on monetary savings. Moreover, precise conversion of operational measures to economic benefits to the actors is limited by:

- The unpredictability of the interaction of operational improvements – for example reduction in variance on the farm might have a calculable benefit to the producer, but will also lead to simplification of processor tasks.
- The limitation of the applicability of case study data to the performance of the wider industry – i.e. no value chain will have average operational performance.
- The variation in accounting methods and book value of assets – for example the benefit may depend on the current depreciated value of an asset.

This paper presents some preliminary work to estimate the order of magnitude of direct economic savings to the actors at each point in the chain. This is based on converting leading operational measures to savings through the use of actual costs identified in the chain and industry estimates (MLC Market Values Analysis ⁶).

Table 1 shows a series of steps to convert operational savings to actor economic savings. The Current Performance is based on actual figures collected in the case chains, and the Achievable Performance is based on targets or actual improvements made by chain participants through implementation of lean thinking, i.e. practices, policies and philosophies. This leads to an estimate of Total Potential Operational Saving, which is then converted to a monetary saving by taking account of the proportion of the actor's variable costs that have occurred at the process where the opportunity occurs. Based on the action plans created by the case study participants, an estimate of the proportion of the saving achievable through lean practices (i.e. Takt-time or work standardization only) is applied to reach a potential cost saving for the actor.

Table 1: Converting Operational Improvements to Actor Economic Saving (Illustrative figures to demonstrate calculation method)

Step	Mortality
Operational Measure	Effectiveness
Current Performance	60%
Achievable Performance with lean practices, policies and philosophies	80%
Total Potential Lean Saving (80%-60%) / 80%	25%
Variable costs incurred in this process stage when loss occurs as percentage of total cost. (Actual costs or estimates are made)	40%
Potential saving to selling actor at stage in chain 25% x 40%	10%
Contribution of Lean Practices only (without policies or philosophies)	50%
Potential cost saving to selling actor for Lean Practices 10% x 50%	5%

Limitations and Supporting Evidence

The cases include most players in the UK supermarket oligopoly and several major foodservice channels. Similarly, in the processing sector many larger UK plants have participated. Although, the authors would not claim statistical significance for

⁶ The Meat and Livestock Commission publish annual reports on the value of meat production and sales in the UK.

the findings, they tentatively suggest that the cases have credibility as they covered approximately 50% of retail channels and 30% of processing capacity. However at producer level, a handful of farmers were involved selected by the retailer/producer as likely collaborators. The producer findings are therefore limited because of this selection method, and as they are species specific. To counter these limitations at the producer end, other data has been used in triangulation; producers outside the chains were engaged in semi-structured interviews, industry body statistics accessed and secondary literature used.

Results⁷

This section summarizes the potential estimate savings identified along the chain associated with Lean Practices. The potential savings to actors in the chain is summarized, and then the detail behind how lean practices of takt-time and standard operations contributed to these potential operational improvements is discussed for each part of the chain.

Table 2 presents the potential savings to the actors, which total 14.5% along the chain. These are currently expressed as variable costs at the stage in the chain, and would need to be unified as a percentage of retail price to give a total chain saving – for example 2% at farm cost has a different value to 2% at distribution centre cost. The value chain potential saving could be considerably lower. However, of the 14.5% available to actors, our tentative estimate is that 8.6% total savings are available through implementation of lean practices. To the farmer this is estimated to be 3.4%, the processor/packer 2.9% and the retailer 2.2%. Further analysis is underway to weight these findings by species, livestock route and distribution channel to provide a range of values for different chains. The next section discusses the operational data behind these estimated savings through description of the major areas of improvement.

Mortality

In the pork sector, PMWS (Post-weaning multi-systemic wasting syndrome) was a major concern e.g. estimated to affect over 80% of Scottish herds in 2004, with mortality rates of up to 25% (Strachan, 2004). The pork FVCA took place on farms that were disease free and had been restocked in the recent past. Birth to farmgate mortality averages 10.6%, and can reach 19% with poor process. Disease free units with top stockmen and investment achieved 5%, giving a 5.6% reduction in cost available in the farm growth stage. A pig producer commented that “the best stockmen reduce mortality from 19% to 5%.”

⁷ The authors acknowledge the data collection contribution in the results section of [information withheld for the purpose of the review process].

Table 2: Economic Savings across Red Meat Chains

	Mortality	Clean Animals	Farm Giveaway	Cutting Room	Packing Lines	In Store Waste	On Shelf Availability	Total
<i>Operational Measure</i>	<i>Survival: Lamb and Pork Only</i>	<i>Clean Animals Entering Processor</i>	<i>Weight Paid For by Processor (lamb only)</i>	<i>Operator Value Add Time</i>	<i>Overall Equipment Effectiveness</i>	<i>Product Paid For</i>	<i>Time % Available</i>	
Current Performance	90.00%	95%	99%	60%	40%	95%	90.00%	
Achievable Performance with lean practices, policies and philosophies	95.00%	100%	100%	80%	60%	98.50%	97.00%	
Total Potential Lean Saving	5.26%	5.00%	1.16%	25.00%	33.33%	3.81%	7.22%	
Variable costs incurred in this process stage when loss occurs as percentage of total cost.	45.00%	0.50%	90.00%	8.77%	10.96%	90.00%	25.00%	
Potential saving to selling actor at stage in chain	2.37%	0.03%	1.04%	2.19%	3.65%	3.43%	1.80%	14.51%
Contribution of Lean Practices only (without policies or philosophies)	100.00%	100.00%	100.00%	50.00%	50.00%	25.00%	75.00%	
Potential saving to selling actor at stage in chain for Lean Practices	2.37%	0.03%	1.04%	1.10%	1.83%	0.86%	1.35%	8.57%

In the lamb sector, Meat and Livestock Commission data for 164 farms from birth to farm gate showed mortality in the range 4-5%⁸. However, two large scale leading producers who participated in FVCA and measured mortality had a total scan to farmgate mortality of 11 to 15%, of which birth to farmgate accounted for 8% to 12%. At first sight, this would indicate these farms are twice the national average. However, the mapping team and researchers concur that the higher figures for these producers is counterintuitive as the producers involved are in the top flight of the industry, which indicates that their measurement may be different from the MLC's participants. The research team have also interviewed a group of nine farmers outside this chain and the indications were that they did not measure mortality in a systematic way, and estimated mortality to be 10-15%. In a nine-year study in the US with a different methodology 10-14% (Berger, 2005) was reported from birth to farmgate. Although the study method is different, they found

⁸ Meat and Livestock Commission data collated by [information withheld for the purpose of the review process].

significant improvement opportunity “3/4 of all mortality had its cause in faulty or inadequate management” and “4 to 5% should be the number one priority of any sheep producer” (Berger, 2005, 41).

In the beef sector, mortality levels were lower, and no evidence on significant opportunities for reduction observed. Our analysis argued that pork and lamb, which represent 57% of slaughtered production value, could be improved by 5.6% and 5%. Firstly, the pork sector was observed to have standard measures to assess mortality levels, which were influenced by the skill or craft of the stockman. The opportunity is to convert the craft process (Womack et al, 1990) to a standard process that is repeatable and transferable to less skilled personnel. Secondly, the lamb sector shows little evidence to support the presence of widespread standard measures evident in the pork industry. The US study showed that improvement was possible, and the tentative finding is that similar gains should be possible in the UK with standard measurement and operations.

Giveaway

Lamb processors to major retailers required lambs at approximately 18.75kg and allowed a variation of +/- 15% or 30% range in total. Over 30 deliveries (Appendix 1) of lambs to processor consisting of 1794 animals had an average 14.55% above the top weight. Meat in excess of the top weight is not paid for, leading to 1.16% of all meat delivered being ‘giveaway’ by the producers. 19% of producer batches had ‘giveaway’ in excess of 3%. Interview data indicated that the main reason that animals were overweight related to the producer holding back product in anticipation of a better price at a later date. This relates to a disconnection between the takt-time of the market and the cycle time of production. In the sample of farmers within the chain, and groups outside, no producer cited ‘giveaway’ as a measure.

Cutting Room

Simons and Zokaei (2005) analyze five cutting rooms – by means of activity sampling and observation – and categorized them as traditional and advanced with significant differences in productivity. The traditional cutting rooms had no concept of Takt-time or standardized work, and exhibited the waste of ‘overproduction’ (Ohno, 1988). By contrast, the advanced lines all ran at a pace that workers could apply standard operations and cut to the correct quality, and in two cases (4 & 5) were also paced to a Takt-time. The paper tentatively (due to the activity sampling method) concluded on operator activity, that traditional lines run at 60% and advanced lines run at 80%; and therefore advanced lines can operate with 25% less labor cost due to improved line balance. With the introduction of Takt-time and standardized operations, the red meat cutting rooms react in the way predicted by

Table 3: Cutting Line Results Summary

Case	Species	Channel	Processor	Activity Sample	Standardized Operations	Takt -time
1	Beef	Foodservice	Small UK	60%	-	-
2	Pork	Supermarket	Medium UK	60%	-	-
3	Beef	Foodservice	Medium UK	70%	✓	-
4	Beef	Foodservice	Large Overseas	80%	✓	✓
5	Pork	Supermarket	Small	90%	✓	✓
6	Lamb	Supermarket	Medium	70%	✓	-
7	Beef	Foodservice	Small UK	65%	✓	-

*Amended from (Simons and Zokaei, 2005)

Figure 3(b). Two further cases are added for this paper, which underpin the original findings.

Another plant visited in Australia which appeared to have a good rate of value added was visited but not activity sampled. The interesting thing with this line was the way in which takt-time was achieved. In previous examples, takt-time was achieved through a motorized belt or line indexing forward at a constant rate. However, in this instance, a light illuminated at regular intervals to signal an operator to launch another carcass at an exact takt-time.

Retail Packaging

FVCA measurement in one lamb packer applied an established standard measure to packing lines, Overall Equipment Effectiveness (Nakajima, 1984). The average value measured was in a detailed study in one plant was 26%. Observation indicates that average OEE in the eight chains was in the order of 40%. This is substantiated by improvement work that achieved rapid improvements of 60% reduction in changeover times. An average of 40% OEE with a target of 60% OEE seems achievable against a backdrop of World class manufacturing at 85%. Moving from 40% to 60% leads to packing lines being scheduled for 33% less time, requiring less labour, less space and less reworked product. Lean practices around standard operations were key to the improvement work on changeovers, reducing labour, energy input and wasted /reworked product.

Retail Store

Retail store back room processes are important to converting product available at the end of a supply chain into customer needs. All retailers agreed that availability was a key measure. One retailer through continuous real time shelf inspection measured on-shelf availability, whilst others assessed what was in store by calculating the time from the last sale of a product until the shelf was replenished. This data indicated that On-Shelf Availability is approximately 90%. A major step

forward on availability during this project was the ECR UK/IGD⁹ work on 200 key lines. For the key red meat lines, this has helped raise availability from 93% to almost 99% in just nine months. The challenge is to repeat this for the whole assortment of products on a regular basis. Back room processes were observed to be inconsistent across store networks, and a key opportunity to improve availability by moving product more quickly and efficiently to the shelf. The realizable gains from improving availability in terms of reduced lost sales is dependent on the interaction with other chains (gaining customers) and products (in store substitution). A worldwide study of on shelf availability showed similar availability for ambient goods, with sales losses due to out of stocks of 2.1% to 4.5% dependent on category (Corsten and Gruen, 2005). Taking the lower figure this equates to 0.25% increase in sales per 1% of availability. If typical red meat chain data (90%) could be brought up close to IGD top 200 lines (say 97%), then there is a 1.75% improvement in sales. In the five retail cases in this study, suppliers were to depot availability was 97% to 99% with 7% to 9% loss between depot and shelf. The team tentatively estimates 50% of this availability loss due to backroom processes and that the workplace organization is a key factor in this. This contrasts markedly with supplier and retailer warehouse/depot housekeeping. This issue was general across all retailers. The use of plastic trays and reduction of cardboard waste negated the issue to a small degree. There were however some isolated examples where local management had implemented excellent housekeeping and visibility benefited.

Conclusion

The detailed analysis of eight major value chains by the a collaboratively by the chain participants is a step forward in understanding how the UK red meat industry may become more competitive. These chains represent a significant proportion of leading UK red meat channels to the consumer, and so the case studies provide a reliable insight to the current value chain of "UK Red Meat PLC". Hundreds of days of industry effort has been contributed to understanding the current state of the value chain. Full analysis is underway to understand the benefits of lean philosophies, policies and practices to industry and the wider community. This paper is a first report of this process, limited to the immediate economic benefits of lean practices to the industry actors. Lean practices (principally takt-time and standard operations) are demonstrated to have significant potential improvement to determinant operational measures in all parts of the chain. These lead to an estimate 2 to 3% cost savings for each actor in the chain at their selling price in implementing lean practices. The significance of this cannot be understated when several actors struggle to achieve profit margins of this magnitude.

⁹ <http://www.igd.com/cir.asp?cirid=1602&search=1>

Further work is planned to understand the economic cost savings expressed as a percentage of retail price. Follow on work to report and quantify long-term collaborative chain work on lean philosophies and policies in certain chains that have a high level of adoption is also forthcoming. There will then be an opportunity to assess the benefit outside the actors in the chain to the wider industry and society.

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Appendix 1: Lamb Giveaway Analysis

Batch size	Batch Weight	Number overweight	Giveaway kg	Giveaway %
15	266	0	0	0.0%
20	437	10	17	3.9%
22	463	6	12	2.5%
25	465	2	2	0.4%
25	485	1	1	0.1%
25	450	0	0	0.0%
28	621	17	25	3.9%
30	538	0	0	0.0%
30	554	0	0	0.0%
30	608	2	2	0.3%
30	639	10	16	2.5%
36	687	0	0	0.0%
40	822	13	22	2.6%
44	794	1	1	0.1%
45	951	15	32	3.3%
46	833	0	0	0.0%
46	900	7	8	0.8%
50	1016	7	8	0.7%
50	1009	7	9	0.8%
60	1317	31	49	3.7%
60	1258	21	31	2.5%
74	1291	3	5	0.4%
75	1348	3	3	0.2%
83	1736	29	45	2.6%
86	1635	10	17	1.0%
87	1878	39	59	3.1%
94	1893	6	10	0.5%
80	1599	12	25	1.6%
100	1950	0	0	0.0%
100	1705	0	0	0.0%
112	2193	6	6	0.3%
146	2535	3	6	0.2%
1794	34866	261	406	
Overweight %	14.55%			
Giveaway %	1.16%			



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A Framework for Evaluating Return on Investment in Management Development Programs¹

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Abstract

Return on Investment (ROI) is a financial metric that can be used to evaluate training and development investments. The objective of this research is to develop an evaluation process using ROI to assess the financial performance of management development programs. A three-phase model for ROI evaluation is presented. These phases include assessment planning, data collection, and data analysis. This model is then tested and applied to a management development program. This paper provides a template for ROI evaluation that can be used to evaluate a wide variety of training and development activities by food and agribusiness firms.

Keywords: Management education, training, assessment, evaluation, return on investment.

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Introduction

Investment in managerial training and development by food and agribusiness firms represents both an important tool of strategy to build competitive advantage and a significant commitment of financial resources. As such, there is increased interest in evaluating the impact and effectiveness of such managerial development investments. However, few managerial training programs measure training effectiveness at the business impact level. The few companies that do evaluate training at this level use subjective information in the measurement effort (Catalanello and Kirkpatrick, 1968, 6; Schaffer and Keller, 2003, 17). Due to the increasing pressure on training costs and demands for training effectiveness in food and agribusiness firms, a method for assessing the economic impact of training is needed. The current trend is to evaluate programs using all levels of Kirkpatrick's 1959 framework. The large investments in training budgets and the need to show the value of the programs are the primary drivers for increased interest in evaluating return on training investment. This assessment can be obtained through the financial analysis of return on investment, ROI.

An important problem is that return on investment from training programs is typically unknown. More specifically, the results of training and development programs are not evaluated in terms of their effect on business results. The impact of training and development on organizational profitability is difficult to evaluate and often not attempted. The benefits of programs are often subjective and difficult to quantify in monetary terms. Benefits also accrue over time and the optimal point of time to evaluate is ambiguous. Because of the lack of evaluation, the effort put into developing human capital is often seen as an expense and not an investment.

The objective of this research is to develop an evaluation process using ROI metrics to assess the financial benefits of management development programs. The evaluation process is intended to be simple, easy to understand, and easy to use. The process is then applied to a case example, illustrating how to implement ROI analysis. The process presented in this paper for determining ROI can be used as a tool to strengthen the impact of management training and development programs.

Kirkpatrick's Four Levels of Evaluation Framework

In 1959, Donald Kirkpatrick developed a four-level framework for measuring training effectiveness (Catalanello and Kirkpatrick, 1968, 2). These levels include reaction, learning, behavior, and results. Each level measures an important area and all levels should be completed in sequential order to obtain a complete evaluation of a training program.

Reaction refers to how well the trainees liked and responded to the program. Learning measures the extent to which the trainees learned facts, approaches, and

principles included in the training. The extent to which job behavior changed due to the training is the behavior level. The results level includes what was achieved and what was improved as a result of the training. Three areas evaluated within the results stage are perceptual, performance, and financial results (Schaffer and Keller, 2003, 8). Perceptual results are based on organizational benefits such as attitudes and initiatives. Performance results refer to measurable improvements within the organization such as increased efficiencies and reductions in absenteeism. Financial results are the financial costs and benefits, such as increased sales and reduced overhead.

Both A.C. Hamblin and Jack J. Phillips propose a fifth level of evaluation. Hamblin refers to this level as the “ultimate value” or the “cost-efficiency” level (Hamblin, 1974, 21-22; Phillips, 1997, 5). Although not all authors acknowledge this fifth level, it can be viewed as an extension of level four. This level of evaluation specifically evaluates the monetary value of the training program. Level five evaluation converts the qualitative data from a level four evaluation into monetary values. At this level, both qualitative and quantitative data are used to determine the financial impact of the training program. The monetary benefits of the program are compared to the cost of implementation to determine the return on investment (Phillips, 1996, 11).

Overview of the Model

The general objective of this study is to create a model for measuring return on investment in management education programs for food and agribusiness firms. This model is intended to be a template or process that can be adapted to fit a variety of training and development situations. The method integrates a three-phase process, incorporating both quantitative and qualitative data. These phases are assessment planning, data collection, and data analysis (Figure 1). Throughout the model, Kirkpatrick’s framework is incorporated and enhanced. The model expands Phillip’s fifth level method and provides insight on how to better apply the method and measure both costs and benefits. The general method developed can be modified and applied to any management education program.

Phase I - Assessment Planning

The first phase of this model is assessment planning. This preparatory phase defines the program objectives, states the purpose of the evaluation, determines the types of benefits to be measured, determines the method of data collection, and establishes the timing for the evaluation. The assessment planning phase is a preparatory phase which coincides with training program design. This phase uses information on program/learning objectives that have been defined during program design. If program objectives have not been clearly specified, they need to be defined and developed before continuing further in this phase and before moving onto phase

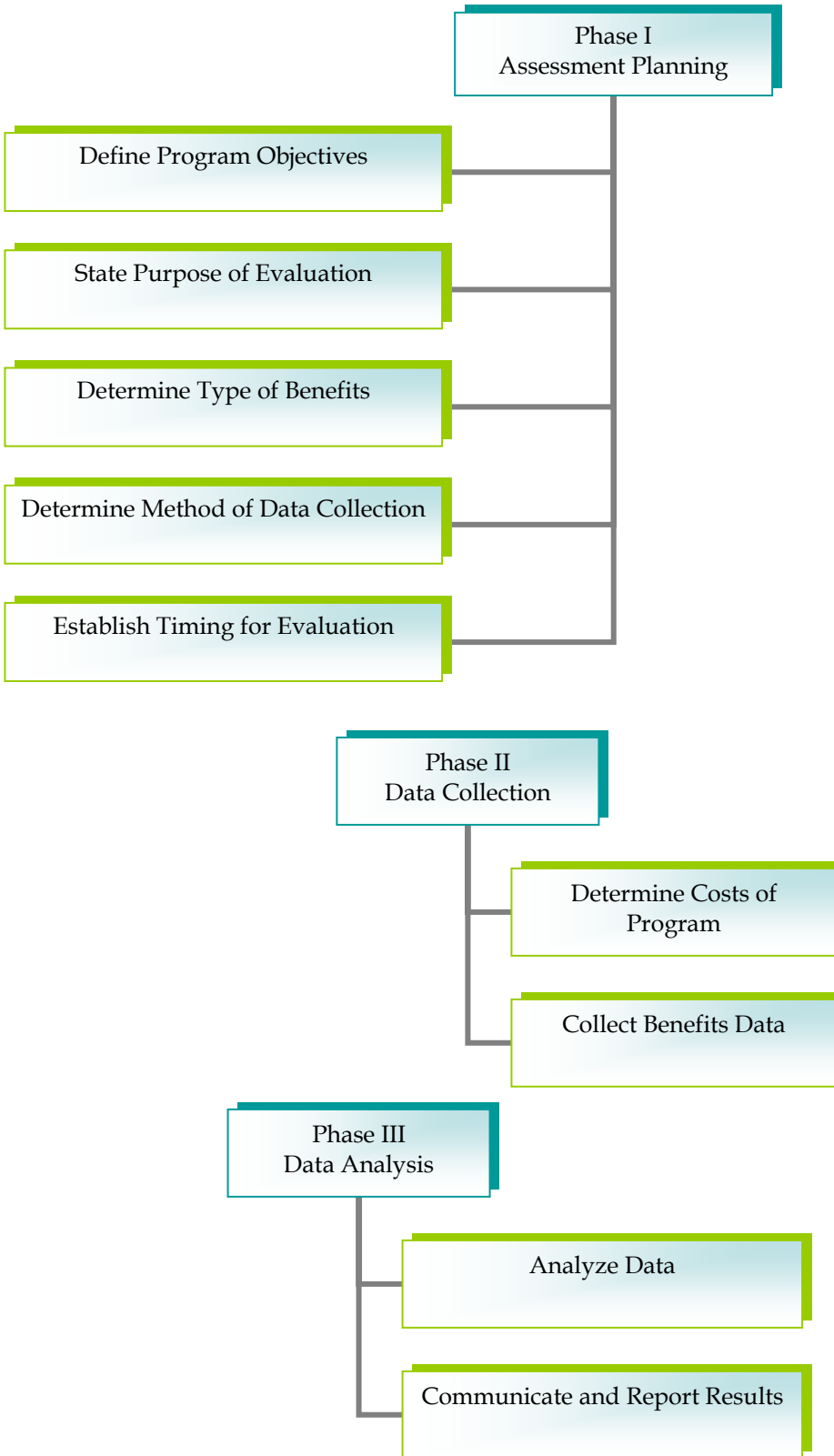


Figure 1: Steps in an ROI Analysis

II. For a program with a predetermined design, this phase is relatively simple. It is important that the assessment planning phase be completed before the training program is presented to an audience.

Learning objectives are an important aspect of program design. Learning objectives are small reusable components used to build people (Shepherd). Robert Mager suggests that there are three specific elements of learning objectives. These elements are the specific performance expected, conditions under which this performance is expected, and the minimum acceptable level of performance (Singh, Singh, and Paul, 1, 2003). Learning objectives should be portable, durable, sharable, and accessible (Shepherd). Portability allows the learning objective to transmit from the training session to various aspects of the business organization. A learning objective that is durable has long-term effects, therefore durability focuses on training effectiveness in the evolving work and business environment. Sharable learning objectives focus on the ability of the trainee to demonstrate and express the purpose of the training in the workplace after the training has occurred. Accessibility refers to the ability of the knowledge gained from training programs to be applied in the work environment.

Two aspects of learning objectives are identifying the client needs and developing a set of specific objectives which will meet those needs. It is imperative to have a clear connection between planned program objectives and impact assessment. To obtain appropriate results, the learning objectives need to be directed towards the defined audience. The audience of the evaluation may encompass both the participants and the company/sponsor of the program. It is important to keep in mind whether the participant's or the company/sponsor's objectives (or both) are of interest for the evaluation.

Once the program objectives are defined, the next step of this phase is to define the overall need and use of the evaluation. There are four main objectives for evaluating training. These objectives are to validate training as a business tool; assist in improving the design of the training; aid in selecting training methods; and assess the cost-benefit ratio of the training. The reasons for evaluation are used in conjunction with program objectives as a guideline to define the success or failure of the training program. Based on what the client wants to measure and their objectives for the measurement, the level of evaluation that the client desires must be determined.

It is imperative that both the learning objectives and the purpose of evaluation address the same audience and the same needs. The learning objectives for the company and the learning objectives of the individual participant are not always consistent. In order to obtain an accurate return on investment analysis, it is important that the purpose of evaluation not overlook this issue.

The purpose of the evaluation should accomplish three things:

1. Determine what the client wants to measure with the analysis;
2. Define the audience based on these measurement decisions; and
3. Ensure that the program objectives include this audience and the measurement decisions.

The third step of the assessment planning phase is to identify the possible benefits of the training program. The benefits are assessed through a component approach. The components are program specific, based on the learning objectives derived earlier in this phase of the model. The components are geared to derive both long term and short term benefits of the training program. General categories for the quantitative assessment include output, time, costs, and quantity. The general categories for qualitative assessment include work habits/personnel data, new or improved skills, work climate, development/achievement, feelings and attitudes, and initiative. The learning objectives play a key role in determining the categories of benefits to be addressed in the evaluation.

In order to derive the benefits from the participants, probing questions need to be developed. These questions are based on the components identified and their pairing to learning objectives. The questions are used to uncover specific application issues. Three major categories of benefit classification are perception, actions, and results. Perceptions and actions tend to involve qualitative data and results are almost always quantitative data. Perception questions identify specific situations and applications with which the participants intend to use the skills from the training program. They may also address the signaling which can occur when training and development is intended and/or perceived to be a reward for the employee. The actions category includes questions which identify specific situations and applications with which the participants actually accomplished tasks using the skills acquired with the training program. Results questions focus on quantitative variables and are based on specific measurable variables which are less susceptible to opinion and bias.

Organization of the questionnaire (see Appendix A) begins with level 3 questions. These transfer of knowledge questions are used as leading questions. These questions focus on self-assessment of improvements in knowledge, and serve the purpose of reminding the participants of the course content and prompting the respondent to think about the program's content and its relation in their work environment.

After level 3 questions, ROI questions are addressed. The ROI questions are focused on specific situations and applications. Following each question pertaining to a specific situation/application, the participant is asked to answer financial questions related to the specific situation/application. The participant is asked to estimate the

impact in dollars of the situation/application and then the participant is asked to provide an estimate (percentage) as to how confident they are in their answer. This confidence level is used to ensure a realistic value to be used in the ROI analysis.

The fourth step of this phase is to determine how to use the questions developed in order to collect the data. The method of data collection can occur in various ways and will vary depending on the type of data needed and the target audience being addressed. Options include phone or personal interviews, email, mail, or fax. Companies can measure the outcomes themselves, or they may be evaluated externally. These measures can be completed through observed performance, or by surveying supervisors, co-workers, and/or customers. The four issues to consider for method of data collection are:

1. What kind of data needs to be collected?
2. Who will the data be collected from (who will be responding and answering the questions)?
3. What will be the most efficient and effective method of data collection for the respondents?
4. What method will achieve the highest response rate?

An easy, organized way to collect data is through a brief survey or questionnaire using both Likert scale questions and open-ended questions. Likert scale questions provide a relatively quick method to collect information from the respondents and the responses can be gathered in a standardized way. The open-ended questions allow for a broader range of data to be obtained from the respondents.

The last step of the assessment planning phase is determining the timing for evaluation. Specific timing needs to be defined for each program. This timing varies depending upon the program objectives, the expectations of the client, and should reflect the period of time in which the client expects to achieve full impact of the training program within the work environment. It is important to give the training the opportunity to be implemented and to affect the work environment. For this reason, the ROI evaluation should never be performed immediately after the training session. According to the U.S. Department of Labor, it can take up to two years for a training program to have an impact (Barker, 2001, 17). For this reason, the maximum recommended amount of time between the training and the evaluation is two years.

To summarize phase I, the steps to follow for developing an evaluation model for ROI analysis are:

1. Define the learning objectives for the audience;
2. Determine the purpose of the evaluation;

3. Ensure that the learning objectives and the purpose of evaluation address the same audience;
4. Define the benefits to be measured;
5. Determine the method for evaluation; and
6. Determine the timing for evaluation.

Phase II - Data Collection

The second phase of the model is data collection. This phase includes determining the costs of the program and collecting the benefits data.

The first step of the data collection is to determine the costs of the training program. For every program, there are three types of costs: known/invoice costs, other known costs, and other/estimated additional costs. The known/invoice costs are the actual costs accrued through the development and implementation of the training program. Other known costs are participant costs which are not part of the “invoice” or “quoted” price of the program. The third costs to consider are other/estimated additional costs. This is a miscellaneous category that may include both internal (program provider) and external (participant) expenses.

Employee wages are not considered in this analysis. This may be a controversial decision because when the client is a company, the company is paying to have their employees trained; therefore the company is losing productive work time. But if the employees are not trained, then the organization is compromising the quality of the employee and forfeiting future gains from the training program. For this reason, the ROI will be calculated without the employee wages calculated as a cost. This point will need to be communicated with the results of the evaluation.

The second phase also includes the collection of data. This is accomplished through the specified method at the specified time, as defined in phase I. Follow-up with the participants/respondents may be necessary in order to ensure a high response rate.

Phase III - Data Analysis

Phase III of this model includes evaluating the data and communicating and reporting the results. Determining costs is usually straightforward. To determine the benefits, it is necessary to convert the qualitative data into monetary values. For each question on a specific application, the respondent is asked to assign a financial figure (either increase in revenue or decrease in cost) for the application. The respondent is also asked for a percentage reflecting their confidence in the accuracy of the financial figure. This confidence factor is used to reduce bias by multiplying the estimate of benefits (in dollars) by the confidence percentage for each question. The benefit figures from all sources are then totaled. The ROI is then calculated using the simple financial ratio of:

$$ROI\% = \frac{(\text{benefits} - \text{costs})}{\text{costs}} * 100$$

Once the ROI ratio is calculated, the results can be communicated and reported. Communicating and reporting results aids in the improvement process for the program and demonstrates accountability for the program. Three important questions are answered with the reporting of the results:

- Did the training program achieve the learning objectives?
- Is the training program making a difference for the organization?
- Is value for money invested being obtained from the training program?

If the answer to all three questions is yes, the program has been successful. The success of each program is dependent on the purpose of the evaluation, as defined in phase I of this model.

Case: General Management Development for a Diverse Audience

AMP, Agribusiness Management Program, is a leadership and management development program developed for an agribusiness. This non-degree program is intended to enhance general management skills and broaden understanding of the functional areas of business. The program is patterned after an MBA program and is presented in multiple seminars over an 18 month time span. This program is designed to increase knowledge in core business functions, including marketing, business strategy, finance, economics, supply chain and logistics, organization and human resources, and information technology. The AMP program also includes sessions on agriculture related issues such as farm policy and the Farm Bill, and emerging trends in the food economy. The program participants include a diverse audience of middle managers, all identified as emerging leaders within the business. There were 30 participants completing the AMP program conducted in 2002 and 2003.

Phase I: Assessment Planning

Define Program Objectives

The objectives of this program are:

1. To diversify the participants' thought process and more effectively approach general management challenges.
2. To expand knowledge of the total food and agribusiness system.
3. To develop and improve the participants' network of professional colleagues.
4. To demonstrate leadership ability to top management and peers within the organization.

Purpose of Evaluation

The purpose of the evaluation for this program is to determine the return on investment for the sponsoring firm. The evaluation uses level 3 transfer of knowledge questions with level 4/5 return on investment questions. The transfer of knowledge questions assist the respondent in recalling the full scope of the program content and in determining the value of the program and the ROI questions elicit the monetary benefits of the program. The evaluation is focused on the program participants.

Define Types of Benefits

The components identified for the benefits of the AMP program include both quantitative and qualitative data. The components of quantitative data are in the categories of output and time; the components of qualitative data are in the categories of new/improved skills, feelings and attitudes, work climate, and initiative. Output is focused on tasks completed and time is focused on efficiency. New/improved skills focus on concepts and skills of the program. Work climate relates to teamwork and relationships with colleagues, feelings and attitudes relates to perceived changes in performance, and initiative relates to the implementation of new ideas.

The questionnaire (provided in the appendix) begins with a section on the importance of each core area for the participant's current position and future position within the organization. Section one helps understand the importance of the program content and it also reminds the participants of the full scope of a complex, multi-year program. Section two assesses increases in knowledge and understanding of each core area. Section two is a level two assessment of learning and again reminds the participants of the full program scope. Both of these sections are comprised of Likert scale questions. The third section of the questionnaire asks for specific examples and applications of the material learned and applied in the workplace. Section three also asks for specific financial data related to these changes/applications. The questionnaire concludes with value questions and suggestions for improvements to the program.

Determine Method of Data Collection and Timing of Evaluation

Data were collected through a questionnaire (described above). The questionnaire was administered through the Internet with the Zoomerang online survey tool. The web link to the questionnaire was sent to the program participants. The questionnaires were returned to the evaluator through Zoomerang. The timing of the evaluation occurred six months after the final session of AMP; this is 24 months after the initial AMP program session.

Cost Worksheet	
Invoice Costs	
Program Development.....	30.9%
Enrollment Fee.....	_____
Facility.....	11.4%
Materials/Technology Fee.....	5.1%
Food/Beverage.....	7.3%
Salary of Trainer and Staff.....	10.7%
Post Program Evaluation.....	_____
Other.....	_____
Total Invoice Costs.....	65.4% A
Other Known Costs	
Lodging.....	10.7%
Per Diem.....	_____
Other.....	_____
Total Other Known Costs...	10.7% B
Estimated Additional Costs	
Travel Expenses.....	23.9%
Other.....	_____
Total Estimated Costs.....	23.9% C
Total Costs	
Sum of A+B+C.....	100%

Figure 2: Cost Worksheet for ROI Analysis for AMP

Phase II: Data Collection

Costs of Program

The costs of the AMP program are presented in percentage form in Figure 2. The actual costs of this program have been generalized to fit the categories of the cost worksheet. This program was developed for a specific agribusiness; and the program participants are all employed by this agribusiness. Individual enrollment fees are not applicable to this program; these costs are captured within the other categories of costs.

Collection of Benefits

To collect the data, an email with the URL link to the questionnaire was sent to all participants of the program. One week following the initial emailing, a second email was sent to all the participants of the program to encourage a higher response rate. Two weeks after that, a third email was sent as a reminder to complete the questionnaire.

Table 1: Descriptive Statistics of Content Importance in Current Position*

Current Position	Overall Mean	Adjusted Mean**	1*** (%)	2 (%)	3 (%)	4 (%)	5 (%)
Financial Management	4.32	4.21	0	0	9	50	41
Marketing Management	4.36	3.82	0	0	18	27	55
OHRM	4.27	4.24	0	5	5	50	41
Supply Chain & Logistics Management	3.59	3.50	0	9	41	32	18
Information Technology	3.55	3.40	0	9	45	27	18
Economics	3.73	3.73	0	5	32	50	14
Business Strategy	4.45	4.45	0	0	9	36	55
Agricultural Industry Issues	4.09	4.09	0	0	23	45	32
Policy & Regulation Arena	4.09	4.09	0	0	23	45	32

*n=22 overall; Questions are based on a five-point scale, 1 strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree.

**Omits responses from individuals who have primary responsibilities within each respective category; n=15 finance, n=8 marketing, n=16 supply/logistics, n=18 otherwise.

***The distribution is for the overall mean.

Table 2: Descriptive Statistics for Content Importance in Future Position*

Future Position	Overall Mean	Adjusted Mean**	1*** (%)	2 (%)	3 (%)	4 (%)	5 (%)
Financial Management	4.73	4.68	0	0	0	27	73
Marketing Management	4.55	4.18	0	0	9	27	64
OHRM	4.55	4.52	0	0	5	36	59
Supply Chain & Logistics Management	4.00	3.95	0	0	23	55	23
Information Technology	3.77	3.65	0	5	32	45	18
Economics	4.00	4.00	0	5	14	59	23
Business Strategy	4.91	4.91	0	0	0	9	91
Agricultural Industry Issues	4.32	4.32	0	0	14	41	45
Policy & Regulation Arena	4.32	4.32	0	0	5	59	36

*n=22 overall; Questions are based on a five-point scale, 1 strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree.

**Omits responses from individuals who have primary responsibilities within each respective category; n=15 finance, n=8 marketing, n=16 supply/logistics, n=18 otherwise.

***The distribution is for the overall mean.

Phase III: Data Analysis

The AMP questionnaire was sent to 30 program participants. Twenty-two responses to the questionnaire were received; this is a response rate of 73 percent. Table 1 presents the descriptive statistics for content importance in relation to the participant's current position. The Likert scale questions on the AMP questionnaire are on a five point scale. All previous evaluations of the AMP program had been conducted on a five point scale; for consistency, the same scale was used for the ROI analysis. These questions specifically addressed the importance of the core course areas in relation to the participant's current job responsibilities within the company. This table presents the total mean of responses for each core area of the AMP program. It also presents an adjusted mean. The adjusted mean omits responses of participants who work in the respective topic areas; for example, a participant who works in Human Resource Management will not be included in the adjusted mean for the category "OHRM (Organizational and Human Resource Management)". Table 2 is similar to Table 1, but provides the descriptive statistics for the participant's next position (future job responsibilities) within the company. Both tables show high means with very few responses of "disagree" or "strongly disagree". These tables show that the participants feel the content of the AMP program is important for their careers both today and in the future. When the two tables are compared, little difference exists between current and future position importance, but the importance of the core areas is greater for all the future positions. The core area of business strategy has the greatest importance in both current and future positions within the company.

The descriptive statistics for improvements and advances in knowledge and understanding of the core areas of the AMP program are presented in Table 3. Like the two previous tables in this section, this table presents both an overall mean and an adjusted mean. This table shows high means in most of the core areas of the program. Information technology is the exception and has a relatively low mean; almost all of the responses were "neutral", "disagree", or "strongly disagree." The adjusted mean was higher for the financial management, marketing management, organizational and human resource management, and information technology areas. As expected, this suggests that there was more learning by those unfamiliar with a specific core course area. The adjusted mean for supply chain and logistics management was slightly lower than the full mean. The greatest differences between overall and adjusted means are in the area of marketing management. Half (eleven) of the respondents indicated that their primary job responsibilities are in marketing/sales.

Two questions addressed the issue of value; one question was directed to the value for the participant, the other question was directed toward the value for the company. The cost of the program was not provided with these questions, therefore the responses are the perceived value of the program to participants. None of the

Table 3: Descriptive Statistics of Improvement in Knowledge and Understanding in Core Areas of the AMP Program*

Knowledge and Understanding	Overall Mean	Adjusted Mean**	1*** (%)	2 (%)	3 (%)	4 (%)	5 (%)
Financial Management	3.50	3.68	0	9	36	50	5
Marketing Management	3.23	3.73	5	14	36	45	0
OHRM	3.27	3.29	0	23	27	50	0
Supply Chain & Logistics Management	3.23	3.20	0	27	27	41	5
Information Technology	2.36	2.40	18	32	45	5	0
Economics	4.00	4.00	0	0	18	64	18
Business Strategy	3.68	3.68	0	5	36	45	14
Agricultural Industry Issues	4.27	4.27	0	5	14	32	50
Policy & Regulation Arena	4.32	4.32	0	5	9	36	50

*n=22 overall; Questions are based on a five-point scale, 1 no increase, 2 little increase, 3 some increase, 4 considerable increase, and 5 major increase.

**Omits responses from individuals whose primary responsibilities are within each respective category; n=15 finance, n=8 marketing, n=16 supply/logistics, n=18 otherwise.

***The distribution is for the overall mean.

respondents felt that the program did not create value for them or for the company. Of the 21 participants who responded to this question, 90.5 percent felt that the program either created slightly more value or far more value relative to the time they invested in the program. The remaining response was that the program created the same value as the time the participant invested in the program. Similar to the respondent's time, 90.5 percent of the respondents indicated that the program created more value for the company than the cost of the program; the response for 'slightly more value' was 42.9 percent, and the response for 'far more value' was 47.6 percent.

Two questions were directed towards ROI; this created 44 possible responses from the 22 completed questionnaires. Of the 44 responses for the questions related to increases in revenue and decreases in costs, twenty-nine respondents answered "no change." Five respondents provided examples of specific changes, but did not provide any financial information related to these changes. Ten respondents provided specific applications of program concepts and the financial information related to these applications. Themes of the examples of applications that either increased revenue or reduced costs for the company include (some responses have been dropped/edited to preserve confidentiality):

- Better management of outbound freight process;
- Improved program management;
- Adoption and initiation of new products;
- Strategic pricing adjustments;
- Improved inventory management; and
- Improved productivity.

The financial data for reduction in cost is adjusted by the confidence interval. The financial data for increases in revenue are adjusted by the confidence interval and by the return on sales for the company. The adjusted financial benefits of these applications ranged from 0.6% to 324% of the total program cost. Using these benefits in the ROI equation, the program resulted in a return on investment of 398%.

It is important to note that this evaluation did not account for any value of signaling. Recognizing superior employee performance through professional development can enhance the loyalty of the employee, improve the employee's attitude toward work, etc., and increase the value of the investment.

This evaluation shows that the value for the participant and the value for the company are greater than the time and cost of the program. This evaluation has also shown that concepts learned in the AMP program can be and are applied in the workplace and have a positive financial impact for the company.

Conclusions

Measurement of ROI is a challenging and difficult issue confronting the human resource development field. The objective of ROI calculations with training programs is to determine program impact on organizational performance. The method developed and applied to the case example assesses the financial impacts of a management development program. This method helps to determine if the program objectives were achieved. This paper is intended to serve as a guide to the basics of evaluation and provide a template for ROI analysis that can be modified to fit the needs of specific training programs.

Some lessons were learned during the case application which will be useful to others applying this process. As pointed out earlier, benefits are very difficult to assess. Open-ended questions about financial impacts are difficult to ask, difficult to elicit responses, and difficult to assure the respondents that their answers will be kept confidential. In this study the open-ended questions and confidence intervals led to many examples and applications, but little financial data was provided. Using ranges for financial impacts may help gather more impact data. These ranges may be necessary in assisting the respondent to answer; the respondent may be more comfortable checking a range than in providing a point estimate of benefits. This is an area for future research to explore. A time dimension question also needs to be

added in order to properly assess the ROI. The intent would be to capture the total impact of the change - be it a one-time impact, or one lasting over multiple years. No cost information was provided with the value of the program questions. The participants answer these questions based on their perceptions. A different approach to the value issue is through use of willingness to pay (WTP) ideas. The WTP asks the participants what they are willing to spend on the training program. This figure can then be compared to the actual cost of the program.

In conclusion, the ROI evaluation method developed in this paper is a useful analysis tool. And, it is important to remember that while ROI is a good indicator of the value of a training program, it is not the only indicator. Repeated use of this method will lead to improvements in evaluating ROI and better evaluation of ROI may have long term implications for firm investment in training and development activities.

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Appendix A: Questionnaire – Agribusiness Management Program

Please respond to the questions below based on your participation in the AMP management development program conducted by the Center for Food and Agricultural Business at Purdue University and (company’s name). Please complete the questionnaire by XXX. This is a blind, confidential questionnaire. Thank you for your help!

Section I: Content Importance

How important are each of the following course content areas to you in your current position with (company)? How important do you believe they will be in your next position? (Circle the appropriate response.)

		Strongly Disagree	Disagree	Agree	Strongly Agree
My knowledge of:					
1.					
2. Financial Management	Is important in my current position	1	2	3	4 5
-tools, capital markets, cost of capital, etc.	Will be important in my next position	1	2	3	4 5
3. Marketing Management	Is important in my current position	1	2	3	4 5
-segmentation, target markets, pricing, etc.	Will be important in my next position	1	2	3	4 5
4. Organizational Behavior and Human Resource Management	Is important in my current position	1	2	3	4 5
-teamwork, negotiation, change management, etc.	Will be important in my next position	1	2	3	4 5
5. Supply Chain and Logistics Management	Is important in my current position	1	2	3	4 5
-inventory management, benchmarking, etc.	Will be important in my next position	1	2	3	4 5
6. Information Technology	Is important in my current position	1	2	3	4 5
-information management, infrastructure, etc.	Will be important in my next position	1	2	3	4 5
7. Economics	Is important in my current position	1	2	3	4 5
-interest rates, exchange rates, trade, etc.	Will be important in my next position	1	2	3	4 5
8. Business Strategy	Is important in my current position	1	2	3	4 5
-core competencies, market and firm evaluation, strategy implementation	Will be important in my next position	1	2	3	4 5
8. Agricultural Industry Issues	Is important in my current position	1	2	3	4 5
-changing farm structure, international trade etc,	Will be important in my next position	1	2	3	4 5
9. Policy and Regulation Arena	Is important in my current position	1	2	3	4 5
-policy process, agricultural commodity program, etc.	Will be important in my next position	1	2	3	4 5

10. Thinking about your current position, and your expected next position, what other topics/subject areas should be considered for inclusion in AMP?

Section II: Personal Impact

Relative to your understanding of the following topics BEFORE you began the AMP program, how much did your understanding of the following areas change as a direct result of AMP. Circle the appropriate response.

No	Little Incr	Some Incr	Cons. Incr	Major Incr	Incr
11. Financial Management -tools, capital markets, cost of capital, etc.	1	2	3	4	5
12. Marketing Management -segmentation, target markets, pricing, etc.	1	2	3	4	5
13. Organizational Behavior and Human Resource Management -teamwork, negotiation, change management, etc.	1	2	3	4	5
14. Supply Chain and Logistics Management -inventory management, benchmarking, etc.	1	2	3	4	5
15. Information Technology -information management, infrastructure, etc.	1	2	3	4	5
16. Economics -interest rates, exchange rates, trade, etc.	1	2	3	4	5
17. Business Strategy -core competencies, market and firm evaluation, strategy implementation	1	2	3	4	5
18. Agricultural Industry Issues -changing farm structure, international trade, etc.	1	2	3	4	5
19. Policy and Regulatory Arena -policy process, agricultural commodity programs, etc.	1	2	3	4	5

20. Please select the area that best describes your field of primary responsibility within (company).

- | | |
|---|-----------------------------|
| a. Financial Management | f. Information Technology |
| b. Marketing/Sales Management | g. Business Strategy |
| c. Organizational and Human Resource Management | h. Research and Development |
| d. Supply Chain and Logistics Management | i. Other, please specify |
| e. Government Affairs/Regulations | _____ |

21. Besides course content, what were some of the most important benefits of AMP to you personally?

Section III: Specific Applications of AMP Content

Please think about any specific changes/decisions you made in your position which were influenced in some way by the AMP program. These might include frameworks used in making a decision, course ideas that led you to change a process you are responsible for, etc. With any such changes/decisions in mind, please answer the following questions.

22. Describe one specific change/decision you made that was impacted by AMP which increased revenue for (company). (You may list more than one if desired.)

_____ No specific change/decision which increased revenue comes to mind.

A. If you made a change/decision, list/estimate the increase in revenue as a result of this change.

\$ _____

B. I am _____% confident that this value is correct.

23. Describe one specific change/decision you made that was impacted by AMP which lowered costs for (company). (You can list more than one if desired.)

_____ No specific change/decision which lowered cost comes to mind.

- A. If you made a change/decision, list/estimate the cost savings that resulted from this change.
\$ _____
- B. I am _____% confident that this value is correct.

24. Overall, how much value did the AMP program create for you personally?
- a. Did not create value.
 - b. Created less value than the time I invested in the program.
 - c. Created about the same value as the time I invested in the program.
 - d. Created slightly more value than the time I invested in the program.
 - e. Created far more value than the time I invested in the program.

25. Overall, and in your opinion, how much value did the AMP program create for (company)?
- a. Did not create value.
 - b. Created less value than the cost of the program.
 - c. Created about the same value as the cost of the program.
 - d. Created slightly more value than the cost of the program.
 - e. Created far more value than the cost of the program.
 - f. No opinion/cannot answer.

26. Please describe any barriers you encountered in your workplace when trying to implement skills and/or concepts learned in the AMP program.

27. Now that you have been away from the program for a while, and thinking about your overall experience with AMP, what suggestions do you have for us? How can we make the AMP program more impactful for you and (company)?

Thank you for your time!



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IQF Catfish Retail Pack: A Study of Consumers' Willingness to Pay

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Abstract

The grocery retail channel represents a potential for increased sales for catfish products because of the competitive nature that imported catfish fillets pose at foodservice market channels. The study examined the potential for selling a household-size pack of IQF 6-fillets of catfish through the grocery market channels, and consumers' willingness to pay for the product. Data used were obtained from a survey conducted in selected southern U.S. cities. Results suggest that households will purchase such grocery retail packages and will be willing to pay an average price of \$4.37/lb. Important factors found to affect willingness to pay include; fish buying patterns, household size, race, age and gender.

Keywords: catfish marketing, willingness-to-pay

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Introduction

The foodservice sector including restaurants and fast-food outlets has long been a major market outlet for U.S. farm-raised catfish products. Over 65% of processed catfish products are sold to the food service industry through seafood wholesalers and distributors¹. The U.S. is a net importer of seafood products and distribution of imported products is by seafood distributors that also handle domestic seafood products. Increased imports of catfish products in the late 1990s and early 2000s caused some decline in catfish price levels (Quagraine and Engle, 2002; Harvey and Blayney, 2002). There was an increase in the consumption of catfish of about 23% from 1997 to 2000 and yet domestic prices did not change during that period (National Marine Fisheries Service, 2002). In terms of revenue however, both domestic traders and importers of catfish benefited from the increased consumption and the major beneficiary in the catfish market appeared to be the importer (Quagraine, 2002).

The apparent economic downturn in the U.S. that began during the last half of 2000, the effects of the 9/11 attacks in 2001, and the resulting unstable economy may have exacerbated the declining trends in catfish sales as restaurant sales generally declined late 2001 and in 2002. Consumer spending in restaurants in 2002 increased by 2% compared to spending in 2001 (NPD, 2003). There were less visits from consumers aged 25-49 years in 2001 and 2002, a drop not experienced by the industry since 1982 (NPD, 2003).

Though long-term trends in household consumption expenditure indicate increasing food expenditure towards prepared foods and meals consumed away from home, food prepared at home accounts for more than half (52%) of household consumption expenditure (USDA/ERS, 2004). The catfish industry has expressed interest in expanding sales of catfish through the grocery market channel because of the competitive nature that imported fish fillets pose at the foodservice sector market. It is envisaged that the marketing strategy of country-of-origin labeling (COOL), emphasizing "U.S. farm-raised catfish" can be better pursued at the grocery retail market level than at the foodservice sector level. Currently, COOL is voluntary for retail seafood products, which includes catfish. Proper household-size retail packages for catfish could be used to provide labeling information on origin, price, quality, nutrition, product safety and other relevant product information to consumers. That way, a positive relationship could be developed between consumers and U.S. catfish to establish a U.S. farm-raised brand equity and loyalty, and probably a guarantee of quality and safety. Umberger et al. (2003) reported a

¹ The proportion represents the minimum fillet percentage of all catfish sales. There is no data on the percentage of total catfish sold to the food service sector so fillet percentage is used because the food sector purchases mainly catfish fillets.

difference of up to \$1.03/lb in auction bids (willingness to pay) between non-labeled steak and steak labeled "U.S. Guaranteed."

The grocery retail channel represents a potential for increased sale for catfish products but it has not been fully explored. Recently, America's Catch, a catfish processing company announced a marketing arrangement with Wal-Mart, for Wal-Mart to sell the former's retail packs of Arkansas-raised catfish products. The arrangement applies to Wal-Mart stores in Arkansas. The product line involved in the marketing arrangement includes a 2lb-bag and a 4lb-bag catfish fillets, as well as a 2½lb-bag catfish nuggets (The Catfish Journal, 2004).

The objectives of this study were to determine consumers willingness to purchase a household-size pack of individual-quick-frozen (IQF) 6-fillets of catfish, and determine how much (\$/lb) households will be willing to pay (WTP) for such a retail pack. A 6-fillet pack of catfish would weigh about 2lb, net.

Studies on Willingness-to-Pay

The study of willingness to pay has taken on a variety of forms in the applied economics literature. The traditional approach has been the use of contingent valuation, which is a questioning technique that asks individuals what they would be willing to pay, contingent on market availability of the product or service (see for example Buzby, Ready and Skees, 1995; Gil, Gracia and Sanchez, 2000; Boccaletti and Nardella, 2000; Cranfield and Magnusson, 2003). Through the use of discrete choice techniques, stated choice experiments, and experimental auction methods, analysts have also derived estimates of money an individual is willing to pay to obtain a product (see for example Hoffman et al., 1993; Lusk et al., 2001; Loureiro and Umberger 2003; Lusk, 2003; Umberger et al., 2002 and 2003)

Though WTP techniques have been applied to examine different issues, it has not been applied to potential market opportunities for grocery retail catfish products. The catfish industry is struggling to stay competitive therefore studies of this nature will help the industry to explore the potential for expanding the market beyond the foodservice sector. In addition, this study contributes to the literature on willingness to pay by performing a mixed logit analysis of ordered data, which is a departure from the ordered probit model commonly used for ordered data analysis. The results from this study will provide important information for the catfish industry that can help them develop products to be sold through the grocery market channel to a target clientele. Catfish sales and even farmer profitability could be increased if consumers are willing to pay for such household-size grocery products

Theoretical Framework and Empirical Model

Analyses of survey rankings and ratings data in empirical work commonly utilize ordered probit or logit models (Greene, 2000) that account for the ordinal ranking or rating of the dependent variable. Random utility modeling technique is the behavioral assumption of these models. With the ordered probit or logit model, the utility of each factor is assumed to fall within a specific utility interval, and the estimation procedure assumes that all respondents perceive approximately the same utility differences between the alternative ratings (Calfee, Winston and Stempski, 2001). This assumption imposes a restriction on the ratings because the implicit assumption of the random terms is that they are independent and identically distributed (iid). A potential problem also arises when data are aggregated, especially when the dependent variable is pooled into categorical levels. Aggregation results in uneven utility spacing, and the behavioral assumptions underlying the discrete choice modeling may be inconsistent with the nature of the ratings or rankings (Calfee, Winston and Stempski, 2001).

In applied analysis, dependent variable data are commonly pooled into discrete groups for the purpose of using discrete choice procedures to analyze the data (see for example, Huang and Fu, 1995; Dasgupta, Foltz, and Jacobsen, 2000; Klapper and Herwartz, 2000). In this study, willingness-to-pay data were pooled into categorical levels therefore the dependent variable data may be “unbalanced.” This is because the pooling resulted in a multi-level data structure with different levels of variability and utility spacing. Consequently, a model of a general covariance structure that assumes uncorrelated errors and even utility spacing is not appropriate. Models that allow random effects, such as the mixed logit model of Revelt and Train (1998) are more applicable to model such pooled data. The mixed logit model is applied in this study because it allows the parameters to randomly vary across the WTP categorical levels to capture the potential heterogeneity in attitudes of respondents. The mixed logit model estimates adjusted parameter means and standard errors that accounts for the cluster effect.

The mixed logit is a generalization of the multinomial logit in which the utility from alternative j is denoted as

$$U_j = \beta' \mathbf{x}_j + [\eta_j + \varepsilon_j] \quad (1)$$

where \mathbf{x}_j is a vector of explanatory variables, β is a vector of coefficients to be estimated, η_j is a random term with a zero mean with a distribution over individuals and WTP categories that depends on the underlying coefficients and observed data relating to category j , and ε_j is the random term distributed iid extreme value but does not depend on underlying parameters or data. Denoting the density function of η_j as $f(\eta_j | \theta)$, where θ is a vector of the fixed parameters of the

distribution, the unconditional choice probability requires integrating over all possible values of η , weighted by the density of η , i.e.,

$$\pi_i = \int \frac{\exp[\beta' \mathbf{x}_i + \eta_i]}{\sum_j \exp[\beta' \mathbf{x}_j + \eta_j]} f(\eta_i | \theta) d\eta \quad (2)$$

where π_i is the choice probability of the mixed logit. The integral has no closed-form solution so the integral is approximated through simulations and estimating the simulated log-likelihood function (see Revelt and Train, 1998; Brownstone and Train, 1999).

Data and Methods

The model outlined above is applied to survey data on willingness to pay for IQF 6-fillet retail package of catfish. It enables an assessment of how selected variables affect the probability that consumers are willing to pay for the product. In order to examine consumers' willingness to pay for a household-size pack of IQF 6-fillet catfish, data from a telephone survey conducted in February 2004 were used. The survey questionnaire was designed and administered by Advantage Communications Inc. (ACI), a market research firm in Little Rock, Arkansas. The final questionnaire used in the survey was based on the findings from preliminary focus groups conducted by ACI. The survey area covered Little Rock, Tulsa, Oklahoma city, Dallas, San Antonio, Houston, Baton Rouge, New Orleans, Birmingham, Montgomery, Jackson, Mississippi, and Nashville, all cities in the southern U.S. The interviews were conducted with the primary grocery shopper in the household. The main purpose of the survey was to collect data on household fish purchasing habits, frequency of fish purchase, place of purchase, type of fish purchased, importance of selected factors on purchase decisions, willingness to pay for selected fish products, types of fish products purchased, methods of fish preparation, and other demographic factors. A total of 1,194 responses were generated from the ACI survey, but for this study, 270 responses were found to be useful, i.e., 270 respondents answered questions that were deemed relevant to this study.

The relevant variables for this study included: willingness to pay for an IQF 6-fillet household-size pack of catfish; frequency of fish purchase (attitudinal variables); importance of product origin and packaging in fish purchasing decisions (informational variables); and demographic factors. Summary statistics of the variables are provided in Table 1.

The relatively low number of responses used for the study suggests a potential sample selection bias. When demographic factors of the total 1,194 population responses are compared to that of the 270 sample responses, there are slight

Table 1: Summary Statistics of Variables

	Mean	Std Deviation	Minimum	Maximum
WTP-None	0.441	0.497	0	1
WTP \$1-\$2.99	0.144	0.352	0	1
WTP \$3-\$5.99	0.263	0.441	0	1
WTP \$6 and over	0.148	0.356	0	1
Buys fish more than once a week	0.148	0.356	0	1
Buys fish once a week	0.274	0.447	0	1
Buys fish twice a month	0.174	0.380	0	1
Buys fish once a month	0.300	0.459	0	1
Buys fish less than once a month ^a	0.104	0.305	0	1
Importance of product source	2.537	1.387	1	5
Importance of packaging	2.430	1.273	1	5
Household size	2.926	1.364	1	10
Race-white	0.581	0.494	0	1
Race-black	0.311	0.464	0	1
Race-Hispanic	0.033	0.180	0	1
Race-other ^a	0.075	0.236	0	1
Age	44.189	12.274	24	78
Gender-female	0.607	0.489	0	1
Gender-male ^a	0.393	0.489	0	1

^a denotes omitted from the estimation procedure.

differences. For example, the population responses comprised of 54.8% Whites, 24% Blacks, and 10.6% Hispanics while the sample responses comprised of 58.1% Whites, 31.1% Blacks and 3.3% Hispanics (Table 1). Females constituted 56% of the population responses compared to 61% of the sample (Table 1). However, the population average age of 44 years, and average household size of 3 are equal to that of the sample, and that could minimize any sample selection bias.

The WTP data were pooled into four groups. Respondents unwilling to pay a price constituted the 'none' category and assigned 0; willingness to pay \$1-\$2.99 was assigned 1; willingness to pay \$3-\$5.99 was assigned 2; and willingness to pay \$6 and over was assigned 3. The explanatory variables were incorporated as follows: Dummies were assigned each to “a respondent who buys fish more than once a week;” “a respondent who buys fish once a week;” “a respondent who buys fish twice a month;” “a respondent who buys fish once a month;” “a respondent whose race is white;” “a respondent whose race is black;” “a respondent whose race is Hispanic;” and “a respondent whose gender is female.” Omitted variables are indicated in Table 1. “Age” and “household size” are continuous variables and were incorporated in the model as such. “Importance of product origin” and “Importance of packaging” are rankings on a Likert scale of 1-5, where 1=not important at all, and 5=very important. Income was not included in the model because of insufficient data points.

Results/Discussion

In Table 1, the distribution of the sample suggests that about 56% of respondents have positive WTP values for a household-size 6-fillet pack of catfish. The average price households were willing to pay is \$4.37/lb. Forty four percent were unwilling to pay any price. This group of respondents probably does not perceive any positive utility to be obtained from the product.

The mixed logit model of ordered data was estimated with the LIMDEP econometric software. The attitudinal variables and the constant were incorporated to have random parameters. Table 2 presents the estimation results. For the random parameters, all the estimates of standard deviations of the estimated mean coefficients were statistically significant except the variable representing twice a month purchase of fish. The statistical significance of the estimated standard deviations indicates there is heterogeneity among respondents. In particular, there is heterogeneity in respondents' fish buying attitudes of more than once a week, once a week, and once a month. However, only the estimated mean coefficient associated with respondents who buy fish more than once a week is statistically

Table 2. Estimates of Mixed Logit Analysis of Ordered Willingness-to-Pay Data

	Mean coefficients		St. dev of mean coefficient	
	Estimate	<i>t-ratio</i>	Estimate	<i>t-ratio</i>
Constant	-0.973*	-1.747	0.707**	8.192
Buys fish more than once a week	0.781**	2.434	0.757**	3.333
Buys fish once a week	0.297	0.894	1.449**	7.700
Buys fish twice a month	0.434	1.353	0.048	0.245
Buys fish once a month	-0.142	-0.469	0.457**	2.825
	<u>Fixed coefficients</u>			
Importance of product source	-0.121**	-2.031		
Importance of packaging	-0.103*	-1.686		
Household size	0.706**	4.284		
Race-white	-0.200	-0.658		
Race-black	-0.083	-0.265		
Race-Hispanic	1.483**	3.211		
Age	0.718**	2.396		
Gender-female	0.358**	2.257		
	<u>Threshold parameters for probabilities</u>			
μ_1	0.773**	12.399		
μ_2	2.524**	22.201		
Log likelihood function	-325.65			
Number of observations	270			

** and * denote statistical significance at the 5% and 10% level respectively.

significant. The implication is that the attitudes of respondents regarding frequency of fish purchase are varied. Even for regular fish buyers (more than once a week), the results imply that they cannot be modeled as a homogenous group.

The sign and magnitude of parameter estimates from the ordered choice model are not appropriate indications of the direction and effects of the explanatory variables on the categorical levels of willingness-to-pay. A more meaningful measure of the effect of an explanatory variable is the marginal effect, i.e., the effect of a change in an explanatory variable on the predicted WTP level or class. For the continuous variables, the marginal effect represents the change in the predicted probability of willingness to pay levels as a result of a unit change in the explanatory variable, all other factors held constant. For the dummy variables, the marginal effects are the differences of the two predicted probabilities, with and without the variable (Greene, 2000). Estimates of marginal effects are presented in Table 3. The estimated marginal effects sum to zero across the four WTP classes for each explanatory variable, therefore a higher probability associated with a WTP class implies a lower probability for another.

Table 3: Marginal Effects for Explanatory Variables

	Willingness to pay (WTP)			
	None	\$1 - \$2.99	\$3 - \$5.99	\$6 and over
Buys fish more than once a week	-0.178** (-7.200)	-0.013** (-4.461)	0.105** (2.622)	0.086** (6.188)
Buys fish more once a week	-0.067** (-3.117)	0.000 (0.191)	0.041* (1.352)	0.026* (1.667)
Buys fish twice a month	-0.103** (-4.585)	0.002 (0.930)	0.062* (1.878)	0.043** (2.829)
Buys fish once a month	0.035* (1.761)	-0.001** (-3.637)	-0.021 (-0.916)	-0.012 (-0.675)
Importance of product source	0.030** (2.030)	-0.001 (-0.867)	-0.018** (-21.414)	-0.011** (-5.306)
Importance of packaging	0.025* (1.684)	-0.001 (-0.822)	-0.015 (-1.646)	-0.009** (-5.306)
Household size	-0.172** (-4.286)	0.005 (0.949)	0.105** (4.165)	0.063** (3.303)
Race-white	0.049** (2.521)	-0.001 (-1.017)	-0.029** (-1.357)	-0.018 (-0.921)
Race-black	0.020 (1.008)	-0.001** (-21.334)	-0.012 (-0.509)	-0.007 (-0.404)
Race-Hispanic	-0.287** (-9.424)	-0.064** (-33.951)	0.131** (2.390)	0.220** (15.896)
Age	-0.175** (-2.395)	0.005 (0.896)	0.106** (2.373)	0.064** (2.140)
Gender-female	-0.088** (-4.026)	0.004 (0.978)	0.053* (1.702)	0.031** (2.250)

** and * denote statistical significance at the 5% and 10% level respectively.

In Table 3, buying fish more than once a week, once a week, and twice a month had a negative propensity to pay a price for a 6-fillet catfish pack, i.e., the probability of being in the class of WTP-None decreased by -0.178, -0.067, and -0.103 respectively. If willingness to pay represents marginal utility of consumption, the results suggest that respondents who did not express any positive willingness to pay probably did not see any utility obtainable from the product. However, for classes involving willingness to pay at least \$3.00/lb, the probability increased by at least 0.026 (Table 3). All estimates of marginal effects for those categories are statistically significant. Buying fish more than once a week, had a relatively stronger effect than the other fish buying patterns. These results may be expected because frequent fish purchase is an indication of fish preference, and such shoppers will be expected to pay more for fish products.

The introduction and promotion of retail packages of catfish fillets can be successful in regions where fish consumption is high. For the catfish industry, the results from this study also suggest that continued availability of the product will be a principal factor to the market success of the product, since frequent fish buyers are willing to pay more for the product. Targeting this group of shoppers will be an effective marketing strategy based on attitudinal segmentation (Cranfield and Magnusson, 2003). Cranfield and Magnusson (2003) reported a positive marginal effect of frequency of shopping at health food store on willingness to pay a premium for PFP™. On the contrary, Umberger et al. (2002) and Umberger et al. (2003) reported that those who ate beef frequently had no significant marginal effect on willingness to pay for steak.

Regarding labeling on product origin, the results indicate this factor positively affected the probability of unwillingness to pay (WTP-none) by 0.03 but negatively affected the probability of the other WTP classes. The negative effects are not as strong as the positive effect on the probability of the WTP- none class. As the scale of importance decreased, the probability of unwillingness to pay a price increased. Nevertheless, shoppers who were willing to pay a price did not appear to find product origin to be important. The increasing importance of product origin to those unwilling to pay and decreasing importance to those willing to pay at least \$3.00/lb could be that the question did not provide specific details about the product origin.

The origin variable is an informational variable and the results obtained could suggest that respondents unwilling to pay a price required specific information on source or origin and would probably pay a price for a catfish pack from a specific source. Alternatively, respondents in classes WTP: \$3-\$5.99 and WTP: \$6 and over would probably avoid paying higher prices for catfish products from certain sources. This suggests the need for a clear indication of product source or origin on retail food packages to enable buyers make informed purchase decisions. For example, Umberger et al. (2002) reported a significant positive effect of beef knowledge on willingness to pay for U.S. corn-fed steak. Similarly, Umberger et al. (2003)

reported a significant positive effect of COOL on the willingness to pay for steak labeled “U.S. Guaranteed.” An IQF 6-fillet pack of catfish labeled “U.S. farm-raised catfish” could be an effective grocery product to use to expand sales.

The importance of packaging is similar to that of product origin. The average rating on a Likert scale for packaging is 2.43 compared to 2.54 for product origin (Table 1). The marginal effect is positive and relatively stronger on the probability of the WTP-none class but negative on the probability of WTP: \$6 and over class. This finding reinforces the importance of specific information on consumer purchase decisions. For example, using experimental auctions to assess willingness to pay for various packages of beef, Hoffman et al. (1993) did not find any difference between bids for vacuum-skin and over-wrapped Styrofoam tray packages when subjects had no information about the packages. However, with specific information about the packages, bids significantly increased.

The marginal effects of the demographic variables were mixed. Household size and the presence of children in the family have been reported to affect willingness to pay in the WTP literature. Household size was incorporated as a continuous variable and was expected to negatively affect willingness to pay. The variable had a relatively stronger negative impact on the WTP-none class (-0.172) than the impact on WTP: \$3-\$5.99 and WTP: \$6 and over classes. The relative change in sign of marginal effect on WTP-none to positive on higher WTP classes is similar to the findings of Boccaletti and Nardella (2000), who suggest that this positive effect on willingness to pay may be consistent with psychological studies. In Table 3, all WTP classes with positive values indicate positive marginal effects. A possible explanation for the positive relationship between household size and willingness to pay could be that, larger households probably have more home-prepared meals, therefore the primary shopper will likely be willing to pay more for such a household-size catfish pack.

Regarding race, marginal effects varied with the race of respondents (Table 3). Being a Hispanic increased the probability of being in the class of respondents willing to pay at least \$3/lb (WTP: \$3-\$5.99 and WTP: \$6 and over) for the 6-fillet pack, and decreased the probability of having a zero willingness to pay (WTP-none). This ethnic group showed the strongest effect on all the four WTP categories compared to the other explanatory variables. Though Hispanics constituted a small percentage of the sample, the potential for selling retail fish packages to this ethnic group should not be underestimated. The Hispanic population in the south, the survey area, is growing and targeting food retailers in communities with high Hispanic population could help increase catfish sales. Being white increased the probability of the WTP-none category but decreased the probability of the WTP: \$3-\$5.99 category. This is in contrast with Umberger et al. (2002) who reported a positive effect of being white/Caucasian on willingness to pay. Assuming that whites

eat out more, compared to Hispanics and other races, the opposing marginal effects of the race variables on willingness to pay for a grocery pack would be expected.

The marginal effects of age and being female indicated a lower likelihood of paying a price, but a higher likelihood of paying a price for the catfish pack. The age variable is continuous suggesting that older respondents were willing to pay a price for an IQF 6-fillet pack of catfish. The significant effect of being a female on willingness to pay at least \$3.00/lb is probably an indication of the role of females in the household's grocery shopping decisions.

Summary and Conclusions

The purpose of this study was to assess the effects of attitudinal, informational and demographic factors on various classes of willingness to pay for a household-size IQF 6-fillet pack of catfish. The catfish industry is interested in expanding grocery channel sales because of increased competition with imported fish products at foodservice market channels. The results of the study suggested that consumers in the southern U.S. were generally split about their willingness to pay for such a household-size catfish pack, with 56% of respondents willing to pay a price for the product. The average price indicated was \$4.37/lb. The willingness-to-pay data were pooled into categorical levels and a mixed logit model used to estimate the ordered data. The model is different from those used in previous studies for ordered data, which assumed similarity in attitudes of respondents regarding their preferences. In this study, the attitudinal variables were specified to have random parameters, i.e., allow some heterogeneity or variation. The results suggest that respondents vary in their attitudes regarding frequency of fish purchase. The overall results suggest that the clientele that will be willing to pay at least \$3.00/lb for the product include shoppers who buy fish at least twice a month, shoppers with large households, Hispanics, older shoppers and females. Promotion of a household-size 6-fillet pack of catfish should target consumers in regions where fish consumption is high. Similarly, there is potential for the sale of retail packages in regions where the Hispanic population is high. Any information to be associated with the product should be specific on product origin, and a U.S. product could attract premiums.

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Gianluigi Zenti, President, Academia Barilla SpA - The Changing Consumer: Demanding but Predictable

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Abstract

It is crucial to understand and predict consumers' behaviour to meet future consumer demands. This report contributes to the discussion by giving an insight into consumers' behaviour from the perspective of Gianluigi Zenti, executive director of Academia Barilla. It is discussed how consumers' choice has changed in particular with regard to Italian food in the US and how Barilla has responded to that challenge.

Keywords: Consumer demand, consumer behaviour, Academia Barilla, Italian food

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Introduction

Nobody would doubt that consumers' choice is getting more complex and differentiated. Thus, it is widely recognized that consumers develop more heterogeneous demands for sensory, health, process and convenience qualities. These changes in consumer behavior, reinforced by changes in the retailing sector, provide new opportunities for food manufactures to add value and differentiate products, which can lead to less price competition, higher margins, stronger consumer preferences, brand equity and better negotiating power facing retailers.

This seems to be also true for Italian foods in the US space. Basic Italian fare is already ubiquitous in mainstream America. However, consumers nowadays seem to develop more differentiated tastes and views about Italian food. Consumers continue to be educated by media-influences, travel, local Italian restaurants, retailers and manufactures about the variety of Italian cuisine. In the past, most manufactures have taken some Italian ingredients and concepts and put a definitive American touch to them. Today, more Americans are aware that Italian food does not translate to Americanized pizza, lasagnas and spaghetti with meatballs. There is broader understanding that Italian cuisine is regional. As a result - even as Americanized Italian food items stay very popular - consumers are increasingly interested in authentic Italian food and consumers now seek out regional Italian products with DOP (Protected Designation of Origin) designations.

This report discusses how consumers' behavior, in particular with regard to Italian food, changed from the perspective of Barilla, one of the leading manufactures of Italian food. Academia Barilla Director Gianluigi Zenti, who is credited with building the Barilla brand in the US, gives an insight into evolutions on the demand side and how Barilla responded to them. Ten years ago, Barilla started their engagement with the US market; educating people about, and marketing, authentic Italian lifestyle. The result was a 20 percent increase in the market share in the US, making Barilla the No. 1 pasta maker in the US.

In 2004 Barilla launched Academia Barilla, which is both a culinary center in Parma dedicated to further education about Italian culture and cuisine as well as a branded product line that will meet differentiated consumer demands. The basic mission of Academia Barilla is to develop, protect and preserve the art and tradition of Italian gastronomy in the world. Specifically, Academia Barilla emphasizes the importance of educating the world about which Italian products are authentic versus which are substandard imitations. To accomplish this mission, Academia Barilla offers culinary courses and consulting services for consumers and businesses worldwide as well as an introduction to authentic Italian products. The location for this mission could not fit better: Parma, which is already referred to as the "Food Valley" of Italy. In addition, Academia Barilla offers corporate services surrounded

by the five-star Hotel de la Ville, a gastronomic library, a cinema complex, shops, and restaurants.

The product line is designed for the high-end US market and is distributed mainly through gourmet stores and fine restaurants. The product palette includes extra virgin oils, balsamic vinegars, regional cheeses and cured meats. The product line is being developed in conjunction with artisan producers across Italy. All products bear DOP seals and the quality is assured by Academia Barilla members along with chefs from particular regions, who are performing blind taste testes to select the best producers.

Interview Notes

Usually it is said that consumer choice is getting more complex. Do you think this is also true for Italian food in the US? Are Americans developing more differentiated views about Italian food?

Gianluigi Zenti: The evolution of the consumer knowledge is tremendous. In the beginning of the 90's consumers considered "spaghetti and meatballs" as Italian food, today more and more consumers know about regional Italian food. The evolution is significant, however the consumers do not get enough information on what is real Italian food, for instance what are the real recipes or how you should drink certain wines.

The other big issue is that there are three components of a product: a physical, an emotional, and an aspiration component. For instance in pasta, initially the physical component was the most important. The evolution of food is that the physical component becomes less, the emotional and aspiration component become more important. It is predictable, but today it is harder to understand what consumers are looking for. The things they are looking out for in a product can be very different: are they looking for sustainability, authentic products, local or environmental-friendly production? Thus, today it is not enough that a product just tastes good; you have to consider all the emotional and aspiration aspects. As those things are much more psychological and cultural related, you need to develop new techniques to understand and serve consumer needs.

How, then, do you position your products in the US market? Do you meet the emotional and aspiration aspect with authentic Italian feeling and lifestyle?

Gianluigi Zenti: We started with zero business in America ten years ago. Initially we were selling pasta to Italian restaurants, which became the credible spokesperson of Barilla. Then we went to the US supermarkets, where we have today about 20 percent market share. We have promoted Italian food in America by communicating with Italian music and Italian lifestyle. It was very successful,

because we really worked on the emotional and aspiration component. We think this is in line with the expectations of the consumers, who are looking more for culture about food. So that is really the big change. As I said, the big evolution is that the future consumer is not just looking on physical components like taste or healthy nutrition. Certainly these aspects are important, but they are not enough. In the future over 80 percent of the value will account for the emotional and aspiration component. Thus, it is becoming more important to know how to build equity in this area, how to build aspiration and emotional values.

How do you communicate your products to the consumer?

Gianluigi Zenti: This is becoming more and more difficult. Thus, another big challenge is that TV is less and less effective. Before you could do TV advertisements and it was easy to build equity. Today, there are too many channels and people do not watch TV as much as they were used. So you need to work on many other, below-the-line activities. For instance, we have a theatre in Parma – teatro del gusto (theater of taste) -, where we do theatricalization of gastronomy. It is like seeing a good movie, where people feel emotionally involved. Thus, we try to do the same thing with food. In addition, we have many laboratories, where we do technical evaluation. We do culinary classes where you actually cook and we do tasting classes, where it teaches you how to distinguish the different type of products. Thus, another big problem is that a lot of people cannot distinguish a good coffee from a bad coffee, since nobody taught you what is good and what is bad, or what you should look for. So we are building a whole database, a knowledge center.

We are going to start teaching, because the consumers are expecting the manufacturers not just to produce but also to teach them about products and how to use them. This is a big evolution, not just being a manufacturer but also a big communicator of knowledge.

There are a lot American-Italian products in the US marketplace, which are probably not close to the original. Does this factor make it even more important to educate consumers?

Gianluigi Zenti: This is a big problem, because 70 percent of the Italian products sold in the US are actually not real Italian products. They might have an Italian name or an Italian flag, but they are made in Argentina or Canada. This is a big problem, because when consumers do not like these products, they lose trust in the Italian food and they would never buy the real Italian product. So education is the only way to give consumers the tools to be able to select which product they want to buy and it will give more return on the investment of the company. This is a very long and costly process, but sooner or later you have to do it. Thus, you can not give up on the role of giving culture. In the end culture is the base of the business. We think that the evolution is going to go back to basics. If you start teaching people

about what is good and bad, they are more and more loyal and they are willing to pay a premium.

Because another problem is that imitated Italian products are made at the lowest cost. China is becoming a very big competitor, because they can produce almost any product at a much lower cost than Europe or the US. So if we do not build on the cultural side, European agribusiness will not have a business in the next 20 years, because it will be always cheaper to produce outside of Europe. So it is really a question of survival that has to be done in the next 15 years.

So we are against the counterfeiting of products and this should apply for all countries. We are not trying to sell only Italian products; I think there is a space for everybody. Thus, the identity is becoming very important in globalized systems. The concept is to promote the identity, because otherwise there is no future.

What consequences will these developments have in the future?

Gianluigi Zenti: The overall quality of the food is a problem. From 1995 the quality of US food went up significantly. However, in the future the quality of food will split into different directions: there will be one consumer segment that is looking for higher quality and one bigger segment that is looking for lower quality at a lower price. Before the market was very homogenous and the overall quality was going up. To serve this development is to segment; we need to start working to serve the higher quality segment, that is looking more for emotional and aspiration aspects.

In addition the distribution of food will change. I think that discounter like Aldi are going to become the way of selling food, because they are very efficient. On the other side, some consumers are still looking to buy high-quality products. Thus, other chains that are specialized in high-quality foods will also gain market share. For instance, in the US Whole Foods became very successful, who only sell natural and organic products. Thus, there will be also a big segmentation on the retailers' level. So overall we are in a situation, where consumers are changing dramatically, because their expectations are changing.

Is consumer demand predictable? How do you discover trends in your company?

Gianluigi Zenti: We do a lot of analytical research. In addition, we do a lot of interviews and we have two locations where we invite consumers and we film what they do, how they cook or how they make decisions. We conduct all of this research in-house, we do not buy research from outside because everybody else has the same information that you buy from outside. You need to develop a method of understanding consumers, so market research is very important in our company. In addition, we do a lot of tests in different countries to find out common needs, so we can launch global products. We do not want to have specific products for every

country, because we need scale economies. When we entered the US market for example, in the US pasta market were 3000 producers of pasta. The retailers said we do not need another pasta company. We argued that we have 100 percent Italian durum wheat pasta, which would be better. The retailers replied that the consumers are happy with what they have. We took the challenge and we made a whole educational campaign of eating the real Italian product. Five years later we became the market leader. So it was a success story of educating the consumer, not giving the consumer what the consumer wants. Because if you if I ask them what they want, if you do that kind of research, consumers say they are happy with what they have. Since they do not tell you what they want, you have to watch consumer behavior. In the end consumer behavior is predictable, but you need to use new tools to predict what the consumer wants. It is very challenging and it is becoming more psychological than technical.

Conclusions

This report gave an insight how consumers' behavior in particular with regard to Italian food changed from the perspective of Gianluigi Zenti, executive director of Academia Barilla. Two points are of particular importance.

First, consumers developed more differentiated views about Italian food over time. However, they often do not get the full information regarding real Italian food versus substandard imitations. So the central mission of Academia Barilla is to preserve the cultural identity by educating the consumers about real Italian food.

Second, to communicate and be recognized by the consumers, it is more and more important not just to rely on the physically components of a product. Increasingly, consumers often want more than just food; they want to identify themselves with the product. Thus, for manufacturers it is becoming essential that consumers link their products with emotional and aspiration values. Gianluigi Zenti emphasizes the importance to build equity in the area. Barilla took that challenge and builds on emotional and aspiration values by promoting authentic Italian food, lifestyle and image.

The need to preserve the identity and to build stronger on emotional and aspiration aspects of products is reinforced by globalization. Thus, in globalized systems it will become essential for manufacturers like Barilla to differ from the average product by building on the cultural associations.

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Robert T. Martin, Managing Director and Regional Executive, Bank of Montreal, BMO Financial Group - Doing Business in China

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Abstract

This interview concerns doing business in China given the rapid changes and industrial development of that country. This report is based on an interview with Robert T. Martin, Managing Director & Regional Executive of BMO Bank of Montreal in June, 2005. Recent federal government financial reform efforts in China have facilitated foreign banks' business development as part of the Chinese WTO market-opening commitment. Foreign banks' development in the Chinese market is based on client demands and product expertise. The banks are concerned about increasing competition, the ability to be sustainable long-term, and innovation through new products introduction in niche markets that are regulatory compliant. For new investors in China, potential opportunities continually occur, but reasonable expectations can only be made with regular visits to China and continuous intelligence gathering to keep abreast of the evolving dynamics.

Keywords: China, bank executive interview, financial markets, business.

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Introduction

China as a market exhibits enormous potential based on its vast population and rapid economic growth, especially after its entry into the World Trade Organization (WTO) in November 2001. The 2005 global retailing report by IGD (a leading education and research organization in the food industry) predicts that China's contribution to global food retailing will nearly double from 8% to 15% between 2003 and 2020. This would make China the world's second largest food retail market behind the US. Such factors encourage continuous enthusiasm for international trade and foreign investment in China. In 2003, global foreign direct investment (FDI) influx to China was sufficient to rank it first globally, exceeding the US for the first time (JETO White Paper on International Trade and Investment, 2003). At the same time however, a recent survey from China Economic Quarterly (CEQ) disclosed that foreign businesses are struggling to be profitable in China given low margins and intense local competition (cited by foodproductiondaily.com, 2004). The opening of China's financial markets began with banking system right after its entry into WTO. Under the WTO agreement, China has promised to completely open its banking market in 2007. Hence, foreign banks' business development in China reflects China's evolving investment environment and the continuing financial reforms.

Robert T. Martin, Managing Director & Regional Executive of Bank of Montreal (a member of BMO Financial Group) discussed the critical factors BMO faces in developing a market presence in China. He also provided suggestions to foreign investors that have interests in conducting business in China.

As an MBA graduate from the Wharton Business School of the University of Pennsylvania, Martin joined in BMO Financial Group in 1980. Partly because of his long-standing interest in China and Asian studies, his expertise has been focused on Asia for the past few decades. In 1996, Martin moved back to Hong Kong to continue his regional executive assignment in Asia. Prior to this he had over ten years' work experience in Japan, Korea and Hong Kong with BMO. In Asia, BMO has offices only in China including Taiwan but they also conduct extensive business relationships in other Asian countries, such as Japan and Singapore. BMO's business activities in China present a small but increasing percentage of BMO's financial performance, and are regarded as important for their overall relationships with clients within and outside China.

Major Financial Services in China

"Our ability to assist our clients in China makes us a more valuable business partner."

Founded in 1817 as Bank of Montreal in Canada, BMO Financial Group aims to be a top performer in the financial market of North America. It provides a broad range of personal, business, corporate, and institutional services through its three major divisions in retail banking, wealth management and investment banking. In its home market across Canada and the US, the BMO retail banking section is the largest among its three divisions in number of branches and employees. However, in China, the primary focus is corporate investment banking with emphasis on building institutional relationships. Martin explains that one concern for this is that individual recognition in retail services is insufficient in foreign markets as China. This is also partly because the current stage of liberalization of the financial services market in China is limited by the business that foreign banks can do with domestic individuals. BMO's current business in China includes trade finance, capital markets in foreign exchange business, correspondent banking (with local banks), and corporate lending. BMO is the leading foreign bank in terms of foreign exchange volumes in China.

Under the current trend of increasing immigration from China to Canada, Bank of Montreal also assists new immigrants by providing them financial information and building up their first banking relations with Canadian banks. Moreover, BMO has started direct investment through its investment bank in a Chinese fund management company named "Fuguo" in Shanghai since 2002. This makes Fuguo company the only one with foreign shareholder among the first ten fund management companies licensed by CSRS (China Securities Regulatory Commission) in late 1990s. Beside BMO, the other five major owners are all domestic securities companies. BMO provides not only foreign capital investment, but also technical support to enhance Fuguo's fund management procedure, new product design and marketing, product assessment, and staff training and evaluation. This investment makes BMO a frontrunner in its field in terms of direct shareholdings in a Chinese fund management company. Martin indicates that this investment broadens the BMO group's business scope to retail services in China in the form of domestic mutual funds sales and creates strong local partners for locally based services.

Branches and Representative Offices in China

"If you have both clients and product expertise with competitive advantage, that's a very good combination."

The BMO group has three branches in Hong Kong, Beijing and Guangzhou and two representative offices in Taipei and Shanghai. Martin points out that outside BMO's home markets in North America, China is currently the country with the largest number of offices. The key factors for choosing these cities and the level of business activities are client demand, product expertise and BMO's own sustainable competitive advantages.

For example, after establishing two branches of Hong Kong and Beijing and one representative office in Taiwan in early 1990s, BMO was looking for another Chinese city in which to open a new representative office. Although BMO first considered Shanghai, there was already another Canadian bank and the Chinese regulators encouraged BMO to consider Guangzhou. The Guangzhou representative office has proved to be very productive and was upgraded to branch office level just one year later in 1995. Martin mentions that the financial market of Guangzhou does not have the same intense foreign bank competition as that of Shanghai. More importantly, Guangdong Province, with Guangzhou as its provincial capital, has long been the No.1 export/import province in China. Martin also points out that rapid development in China has changed the outlook since the early 1990s and the Chinese government regulators have also adjusted their approach accordingly. They now try to take an objective position in a more open market manner. If the same choice were to occur today, BMO would have initiated business in both cities. Although the representative office in Shanghai was not opened until 2001, it has the potential to be upgraded into branch office in the future.

Foreign banks in China face certain restrictions in conducting RMB (Chinese currency) business and the number of branches they can operate in major cities. Since BMO focuses on wholesale and investment banking, there is less need for local branches and they are satisfied with the current office numbers in China at present. Martin also indicates that financial product concentrations vary among cities for historical reasons. For example, capital market business in foreign exchange is concentrated in Guangzhou; but a lot of trade finance business is in Beijing.

Clients' Principal Business Styles

BMO has a diversified foreign client base in China including sectors in manufacturing, services, and agribusiness. Typically, these companies may start off importing into China. As time goes by, they may consider the cost pressure in their own countries and may choose direct investment or strategic outsourcing in China. Martin mentions that in 2004, China became a net importer of agricultural goods, indicating many opportunities for foreign agribusiness exporters and retailers.

In the case of direct investment such as joint ventures or wholly owned ventures, BMO can help with corporate lending and foreign exchange products. Sometimes their clients also require consulting services in choosing local partners and meeting local regulatory requirements.

The branches of BMO in China also have domestic clients with needs for specific products such as foreign exchange products. Martin says they are much more careful in local lending because of the relatively higher risks and less information about clients in a foreign market as opposed to their home market. Martin also

points out that there are some lower risk products they can provide. “Now more Chinese companies are investing abroad. We are very interested in assisting them.”

China: A New and Liberalizing Market for Financial Services

“A gradual but not too fast change is more conducive for keeping the healthy environment for the economy of China.”

Started as the oldest Canadian bank, BMO is primarily a North American super-regional bank with Canada and the US as its home markets. It also seeks niche opportunities of diversified financial services in different parts of the world. In Martin’s view, China is a relatively new market with limits on the types of businesses they can enter. However, as China liberalizes its market and becomes one major engine of growth in the 21st century, it becomes more important for foreign investors. Although volatile, China is still a very promising market with an acceptable risk profile in Martin’s view. As he puts it, “China is liberalizing in a reasonable way. I suspect that such changes will take place in a small and gradual way in order to ensure stability and healthy environment.”

The Asian financial crisis in the late 1990s rang a warning bell of potential imperfections in the current international financial system, especially in the immature financial market of East Asia. The crisis also justifies China’s cautious financial policy in macroeconomic control and surveillance of the market security. This is especially true regarding the short-term floating capital and foreign exchange control during the gradual liberalization of its financial market. In response to this point, Martin admits that although a large-size economy decreases vulnerability to financial crisis, regulators are always concerned that speculators become discouraged from entering the market and consequently causing sudden capital flight.

Martin also provides his comments on the current important issues of WTO and RMB revaluation. From the view of the financial services sector, BMO is very pleased with the progress in opening the banking market since China’s entry into WTO in late 2001. They also see obvious improvement in their own capacity in conducting local currency finance and in dealing with a larger group of clients than before. In earlier years, overseas banks in China could only conduct foreign currency business with local customers. By the end of 2004, China has announced 18 cities that are open to overseas banks for conducting RMB business. As an example, Martin mentions that just a few days before this interview, BMO has received the permission for the first time to conduct RMB transactions in its Guangzhou branch. So far the clients are pleased with this progress. They are planning to get such permission for their Beijing branch in the future. On the date of this interview, the hot debate over RMB strength and revaluation still focused on whether RMB should appreciate. Martin remarks that China has to

make decisions based on its own requirements rather than simply responding to the political pressures from other countries. At some point China may try to add more flexibility in foreign exchange. Martin further illustrates, “A stronger RMB will be positive for many Chinese importing companies, although on the exporting side it could be a bit negative. Still the differential in wages and costs between China and the [international] market price is so great that a relatively small adjustment in exchange rate won’t make much difference to China.” He believes that over time China is going to have a more flexible exchange regime. “It’s just timing this with the development of the country and the strengthening of banks so that all could happen in a more stable manner.”¹

Relationships with Chinese Regulators and Local Banks: Strong Dialogue and Cooperation

Martin stresses the importance of maintaining good relationships with government regulators and on-going dialogues with various sectors and industry groups. Such conversations can be achieved through various kinds of meetings at many different levels.

The major regulatory institutions for foreign banks include China Banking Regulatory Commission (CBRC), People’s Bank of China (PBOC) and State Administration of Foreign Exchange (SAFE). In mutual funds and securities business, there is the regulator of China Securities Regulatory Commission (CSRS). The functions of these regulating agencies used to overlap in some way but are in recent years, performed more distinctively. Martin recognizes the positive change over time in their outlook and efficiency. “As the market liberalization brings with it many more new issues, these bodies are highly professional and are willing to discuss a wider range of issues.” Martin emphasizes that BMO’s philosophy is to have open dialogues with regulators for mutual transparency and understanding. Martin also regards personal network among their Chinese employees as a valuable source of building local relationships.

Martin regards Chinese banks to have a natural home advantage and to know the local clients better than foreign investors. He also thinks that foreign banks’ entrance can aid the Chinese market by introducing global technological, management and marketing perspective. More importantly, foreign banks enter in niche areas where they can raise the competitors’ atmosphere and encourage Chinese banks to develop more rapidly. BMO works closely with Chinese banks. Martin adds, “Our relationship with Chinese banks is much more like cooperators

¹ Just one month after the interview-July 21st, 2005, China announced the change from fixed exchange rate regime to managed floating exchange rate regime, which is regarded as a milestone for China’s currency reform. From that time until the present (April, 2006), Chinese currency, RMB, has gradually appreciated.

than competitors. We provide training programs in risk management and also have a lot to learn from their perspectives of local practices.”

Pressure and Concerns

“There is a lot of pressure now on hiring good local staff.” Martin explains that there are more foreign companies entering China who want to hire locally while domestic companies are also offering more competitive salaries than before to retain staff. So BMO faces high degree of competition in finding and maintaining good people in workforce.

“The current regulatory capital requirement for branches like ours is relatively higher than international standards.” Martin comments that branches like theirs are probably overcapitalized and it is expensive to hold a lot of capital. Meanwhile, they are also concerned about increasing the capability of competition and sustainable development, and introducing their new products in a way that are both regulatory compliant and useful to the client. Chinese regulators have been aware of these concerns. Martin believes that over time the situation will evolve in a positive manner.

“I am very optimistic about the Chinese market.” Martin illustrates this point by saying that Chinese culture emphasizes education and hard work hard as a means to build a more positive future. Of course business cycles go up and down, and there will always be some problems. But he believes that the overall direction is quite positive for the Chinese market. Is this overly optimistic? Martin thinks that it is not based on some unrealistic suspicion, but on real and attainable conditions as shown in China’s efforts for market liberalization.

Suggestions to Foreign Investors New to the Chinese Market

“The cycle of new opportunities in China can change so quickly that it is still possible to enter the market even at a later stage.”

For first-entry clients into China, Martin suggests that they make a number of visits, meet as many people as possible, and get to know the government and relevant regulations. Often when people first visit China, they may be too optimistic and too excited with the large market potential. When they go back several times and gain more experiences, their expectations become more realistic. “Expectations about China at the early stage are usually very high, but it’s best not to make a lot of critical decisions on the first trip.” Martin also emphasizes the importance of building personal relationships. “In some countries like China, personal relationships may be even more important than institutional ones.”

What about the concern of first-mover advantage? Martin's opinion is, "Those having been in the market earlier may demonstrate better staying power and understand the market better, and hence may be more realistic in their expectations. That's the advantage of being first-movers." But he also points out the other side, "For the earlier stage movers, because there was not enough information and people did not have a lot of experiences, some may face more pitfalls and may not make much money early on. Hence, it is not necessarily correct to think that it is too late now because other companies are already there. Even if a company hasn't yet set up a large business relationship with China, I think it is never too late to start."

For direct investment, Martin suggests that most of the companies initially feel the pressure from the market that they need to take action. Among the options Martin recommends wholly owned ventures if the type of business can ensure the control of management, marketing, and technology. He also suggests this business structure when protecting technology and intellectual property is extremely important. But in some business sectors, local partners are vital to get permit and product distribution channels in which case joint ventures are a more viable structure and would establish the best rapport with local suppliers and customers. Another possibility is collaboration with a third country company that has closer relationships and a better understanding with the Chinese market.

Summary

Martin's comments reflect the efforts from China to meet its market-opening commitment after its entry into the WTO. Foreign banks' development in China's markets is based on two key drivers: client demands and product expertise. Foreign banks are concerned about the capability of competition and sustainable development, and new product introduction in niche market that are regulatory compliant.

China is a large and promising market with both big opportunities and challenges. In financial markets, it remains relatively restricted while facing gradual liberalization. Although some large foreign banks are trying to enter China's lucrative retail banking market, more foreign banks' competitive advantages are still in niche products and services for target markets. Foreign banks with their advantages in developed skills and international networks may also attract Chinese corporate clients who want to engage in international business.

First time investors in China are cautioned not to become overly optimistic. Since China is changing and developing quickly, first-mover advantage is not the only issue that matters. Reasonable expectations of the Chinese market can only be made with regular visits to China and continuous intelligence gathering to keep abreast of the evolving dynamics. Furthermore, they should try to establish good

personal relationships as well as institutional ones. By all means, it is never too late to consider starting business in China.

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Ross McLaren, Retired President and CEO, Shaw's Supermarket, Inc. – The Changing Consumer: Demanding but Predictable

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Abstract

The food retail business has undergone radical changes in the 21st century because of changing consumer demand in the market. The changes in consumption patterns are largely influenced by higher income and the expenditure on food as a percentage of disposable income, demographic changes, urbanization, improved transportation, trade relations, and consumers' concerns with regards to product quality and food safety. There have been observed differences in the way consumers in developed and developing countries react to income changes. For developing countries, higher income levels foster an increase in the demand for meat products which is why livestock sales have generally improved in developing countries. In more mature markets, consumers are allocating income to high value processed foodstuffs, a wider range of products to choose from, indulgence and better product quality. The demand for organic food products has increased, associated with consumers' beliefs that consuming organic products is the only way they can protect themselves from consuming toxic substances contained in pesticides and veterinary drugs. In addition, consumers require product labeling and product traceability on produce, as quality assurance instruments, to further protect themselves from food safety risks. Affluence in developed countries is giving consumers' the confidence to demand anything from the market as long as they will be paying for their demands. It is therefore important for food retailers to be able to anticipate and respond to the changes in consumer demands.

Keywords: Changing consumer, demanding, predictable

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Introduction

An interview with Ross McLaren, a retired President and CEO of Shaw's Supermarkets Inc. (USA), addressing four key issues associated with changing consumer demands and the food retailer's perspective:

1. Shaw's Supermarket industrial organization and clientele
2. Consumers buying behavior
3. Strategies that are put in place to cope with the changes in consumer demand
4. Strategic direction

Industrial Organization and Clientele

Shaw's Supermarket Inc. was established in 1860 by George C. Shaw. In 2006, it is one of the leading grocery stores in the North-Eastern United States (US), operating 200 food and drug stores with approximately 30,000 employees. Shaw's serves a diverse, multi-racial/multi-ethnic consumer base. Some of the groups and nationalities represented in the clientele include Hispanics, Jews, Portuguese, Latin Americans, African Americans, Italians, Polish and other ethnic communities. Given that the US has a vibrant immigrant history, Shaw's had a modular approach to each store's product range. For stores located in the higher income urban areas, they specialize in vitamin and health supplements, while stores in young professional, metropolitan residential areas they have Sushi bars that are less popular in the rural locations.

Consumers Buying Behavior

McLaren revealed that, as with retail industry trends in the last 5 years, Shaw's share of sales has declined. The main reason for this seems to be that the expenditure on food as a percentage of disposable income has fallen to 6 or 7% today from 10.7% in 1997. This is in line with the known tendency for improved purchasing power to cause demand to change towards high-value service products like processed and ready-made food which are more convenient.

In recent years with improving disposable income and changing lifestyle patterns, consumers require more convenience in their consumption. They demand more of prepared meals that must come as ready-to-prepare or ready-to-eat which is the reason why the market share of supermarkets have relatively gone down while fast-food chains and restaurants are recording the highest sales ever. This situation is the same worldwide and not restricted to the United States.

Today's consumers are choosier. They demand high quality and nutritious foodstuff which is why the demand for fruit and vegetables have increased and this is where supermarkets are gaining their market share these days. Sales shares for

supermarkets are expected to improve in the coming year. Some of the factors contributing to this change will be the aging population worldwide. It is a known fact that the 'greying' nation prefers home-cooked meals and they want more of vegetables and fruit in the diets. There is evidence in literature that by 2020 fruit and vegetable sales would have grown by 4.2% and this is what will improve the supermarket sales share.

McLaren revealed that consumers today are more informed and they are highly concerned about the environment and food safety issues. To this end, consumers now demand more of natural and organically produced foods in the belief that consuming organic foods is the only way they can protect themselves from consuming toxic substances contained in things like pesticides or veterinary drugs. The increasing food safety concerns led to the need to put in place product traceability regulations. It is anticipated that being able to trace products back to the farm where they have been produced will protect consumers from ingesting foreign substances that may be harmful to their health.

Changes in consumers' demand are also a product of increasing diversity of the population served. Consumers are constantly traveling and relocating, thus new ethnic groups are being added to the clientele all the time. At the same time the increasing number of migrants coming to America from Africa, Asia, etc, also bring in new demands in the food retail business. Once supermarkets stock these foods more customers become interested in the new range of products on the shelves and a whole new pattern of consumption and expenditure is established.

Airlines have been playing a major role in providing year-round logistics to connect markets. A good example would be the role played by airlines in transporting cut flowers from Southern Africa to the Western markets. As US consumers became more affluent, their demand for cut flowers grew rapidly, even off season. This drove the market to seeking alternative suppliers, particularly in the Southern Hemisphere. Because of the transport logistics that were often non-existent, retailers were directed to countries like Kenya, Zambia and Zimbabwe that had regular air links already established. This is how the US came to import cut flowers from Zambia because the Western consumer's ignore product seasonality. McLaren observed that US consumers are not really concerned about the origin of their products; what matters to them is getting the product from the market when they want it.

The discussion went on to determine if the changes in consumer's demand were rational or influenced by the media. According to McLaren the word 'rational' in relation to consumers' demand is non-existent because what consumers say is not what they do. This point was illustrated by the attitude of fast foods consumers. While few would admit that they eat fast foods like McDonalds or Burger King, these fast foods chains hold the largest market shares in today's food retail

business. McLaren revealed that while he was at Shaw's a survey was conducted to determine how much consumers use Shaw's. From this survey they established that a number of consumers did not use Shaw's because it was expensive when compared to similar stores. When they were asked to elaborate on what they meant by 'expensive' they said that Shaw's offered a wide range of products to choose from which creates an irresistible impulse to buy more than a single product and consequently spending more than originally intended.

The interview continued with a discussion to determine if these changes in demand are a result of deteriorating food quality and falling health standards or just media hype. McLaren maintained that the recent introduction of food standards and control measures in the market are not based on deteriorating standards but are an influence of media hype that advocate strict regulatory measures in the market. The recent demand for product traceability is a result of the media blowing incidences like the mad cow disease outbreak out of proportion or increasing food safety concerns that are sensational rather than factual. For example, the media advocates that genetically modified foods are not good to the point that very few consumers want to buy these products, yet there is very little evidence that these foods are harmful.

Identifying Consumers' Demands and Means to Meet Them

A question was then raised as to what sorts of changes have been prevalent in the market and what strategies Shaw's is employing to respond to these changes. McLaren revealed that consumers are asking for less additives, and more nutritious foods with minimal allergic reactions especially in the drug stores. This is a challenge for the retailers because their existence depends so much on what consumers want. Today most of the products on Shaw's shelves satisfy the traceability requirements and labeling needs to meet consumers' demand.

While McLaren was with Shaw's he chaired a marketing strategy committee that met every two months to discuss the market as a whole. The committee spent time discussing data provided by the company's customer service department to gain an insight into consumers' wants, what they are happy with and what they are not happy with. This market research analysis, plus the media articles to which Shaw's subscribes, helped them spot "fashion" demands in the market relating to food and health issues. This helped Shaw's management to predict almost with certainty what consumers want. McLaren believes that there is nothing that beats your eyes and ears as a retailer for getting the right information about trends. For this reason, he had a team that spent time on the shop floors and also visited competitors at home and in other countries to get first-hand information of what consumers really want. According to McLaren, 'retailing is about meeting consumers' needs and good retailing is anticipating their needs before hand'.

The discussion indicated that food retailers are making considerable investments to meet consumers' demand, such as ensuring that producers comply with consumers' demands like product traceability, labeling and certification requirements. Food retailers, like Shaw's, observed that if they provided consumers with what they wanted they would buy the product and would be loyal to their market requirement.

We further discussed some of the impacts of consumers changing demand in terms of products that Shaw's stock, sources of supply and quality assurance they give to their customers. What unfolded from this discussion was that Shaw's has started stocking more of healthy, nutritious and convenient products that suit today's consumers' lifestyle. Since their suppliers are both domestic and international, Shaw's requires that all their suppliers, especially those from areas classified as high risk areas such as Africa, to label products and comply with traceability regulations.

Strategic Direction

The role that Research and Development Units should play with the changing society cannot be overemphasized because some of these recent changes need scientific research support. For example, it has been revealed that recently consumers are moving away from cow's milk consumption to soy milk, probably because of rising lactose allergies or the increase in the number of strict vegetarians and vegans. It is the role of research units to provide information regarding health benefits of such a change. The role of governments in this regard would be to provide policy regulations to protect consumers from consuming substandard products. Governments are doing their best to protect consumers though they sometimes feel that the protection given by governments is inadequate.

Analysis and Conclusion

According to McLaren most of these changes in consumer demands are not based on deteriorating market conditions but are just media influence that shapes consumers' demands. The media has been providing consumers with so much health and nutrition information that do not even last. For example, not so long ago the Atkins diet was the most popular diet for the US market which encouraged people to eat more protein and less carbohydrates.

Without question, consumers' demands are changing every day but most of these changes are predictable. The challenge for food retailers is to position themselves in such a way that allows them to adjust to these changes. Retailing is about providing consumers what they want while good retailing is about predicting consumers' demand before hand, then the desired harmony will be achieved in the system with everyone being a winner.

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**Harsha de Silva, Director, E-development Labs (private) Limited
and Senior Economist, LIRNEasia - Agricultural Market
Development through Information and Communication Technology
(ICT): A Developing Country Experience**

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Abstract

One of the fundamental characteristics of a well functioning market is the ability to transmit useful information to decision makers at the micro-level, which will ultimately culminate in the development of effective macro-level policies. A key assumption in economics is that market information is readily available to role players in business and marketing. In reality however, farmers in the developing world, unlike their developed countries counterpart, are still faced with the challenge of accessing credible market information. Market information is an essential component of agricultural production, distribution and marketing. The availability of timely and accurate market information to farmers by means of fast and effective modern information technologies has enormous potential of greatly enhancing agricultural production, investment, financial and strategic decisions. The objective of this executive interview is to show how information and communication technology (ICT)-enabled agricultural market information service can improve productivity, bargaining power and market profitability of rural farmers in developing countries. Dr. Harsha de Silva, the architect and implementer of Govi Gnana Service (an agricultural knowledge service: GGS) in Sri Lanka shares his views and experience. The interview was conducted at the 15th Annual World Food and Agribusiness Forum, Symposium and Case Conference in Chicago, USA.

Keywords: Information and communication technology (ICT), agricultural markets, market information

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Introduction

Agriculture has been regarded as that field of human endeavor which exhibits the greatest gap between available knowledge and what is being practiced (Al-Sudeary, 1982 cited by Van Niekerk, 1995). This is probably more evident in the developing world. Agricultural markets in many developing countries are becoming more competitive, nevertheless it is characterized by an undersupply of relevant information in some cases, and inadequate access in others. In order to establish a competitive market for agricultural produce, it is essential that adequate market information be available to all market participants. It should be noted that having access to information is separate from making the best use of available information (Metcalf, 1988). However, a common objective – direct or indirect – for all users of agricultural market information is to maximize returns to investment in the short, medium and long run (Frick and Groenewald, 1988; Russell, 1983; Craig, 1979). Therefore, it will be fair to assume that farmers, if given access, will over time take advantage of available information in making decisions that will improve their productivity and profit margins.

Economic Signal

A fundamental assumption in economics is that market information is readily available to role players in business and marketing. Market information can take various forms, and varies from market analysis and forecasts to market price data. The availability of market information (especially price data) provides the farmer with vital information with regards to market demand; this will help him determine what to produce and how much to produce. When farmers are able to access credible market information, it enables them to incorporate price considerations and market situation into their production, investment, financial and strategic decisions. This will in turn improve their bargaining power, as they would know which crops to grow and the market price of such crops. At the end, farmers will produce with a greater level of certainty at a scale that meets consumers' needs and also achieve the much desired profitability.

Transparency

The majority of the farmers in the developing world live in rural areas (Aina, 1995; De Silva, 2005); nevertheless they form part of the complex marketing system and need information. The methods of collection, collation, and dissemination of data are crucial to the provision of timely and relevant information to the end-users. For instance, the methods used in collecting price data will very much determine predictability of market situation. Unlike the sophisticated system of price gathering in developed countries where price data are gathered from well advanced wholesale markets and distributed via fast speed internet, several other less efficient methods are more common among rural farmers in the developing

countries. In order to ensure that these farmers have access to timely and accurate market information therefore, there is need to determine what ways information can be communicated and understood by them. In cases where literacy and numerical training is not sufficient, it may be necessary to structure the method of dissemination to suit farmers' situation.

Asymmetry in Agricultural Market Information

A further challenge small-scale farmers in the developing world are faced with is that of asymmetry in information which leaves them at the mercy of the middlemen (De Silva, 2005). Asymmetric information usually gives bargaining positions in the market. Ultimately, the situation results in market failure which in turn attracts market regulating policies. But the availability of information to all market participants, on a symmetric basis, could serve as a countervailing power to market failure (Salin, Thurow and Elmer, 1996). Therefore instead of installing policies that regulate markets or counter market failure, a better solution to market failures will be to create an environment where information can be accessed by all participants in the market. Equal access to market information cuts down on marketing channels, reduces transportation costs and ensures fair transaction (De Silva, 2005). On the contrary, asymmetry in market information results in uneven distribution of benefits and risks between farmers and middlemen. In most cases, small scale and/or rural farmers in developing countries carry the larger portion of the risks while deriving the smaller benefits.

Cost/Benefit of Market Information

Agricultural markets in developing countries are becoming less dominated by government interference (Barrett and Mutambatsere, 2005). As such, information flow from these markets, when available and accessible, is becoming more reliable. Government agencies remain the primary source of general agricultural market information (Wu et. al., 1999). However when value is added to such information and it is tailor-made to meet specific needs, and when it is disseminated through modern technologies, it comes with a price. The cost of accessing value-added information disseminated by means of fast speed internet, telephone or other technologies may create a disincentive for many small-scale farmers (Rheingold, 2005). Unless the benefits derived from the information exceed the cost of accessing it, farmers will not patronize these initiatives. It is obvious that if the government plays a too small part, it will be to the disadvantage of poor rural farmers. This is not to say that government should take the role of private ventures. The solution therefore lies in the maintenance of closer collaboration among role players – non-governmental organizations, government institutions, extension agents and support service providers.

Harsha de Silva¹

Based on the above background, Harsha de Silva, shares his views and experience, particularly in the area of agricultural market development by means of information and communication technology (ICT). Dr. de Silva is the director of e-development labs (private) limited and a senior consultant economist with LIRNEasia. LIRNEasia (www.lirneasia.net) is the Asian affiliate of LIRNE.NET, collaboration among leading universities in Denmark, the Netherlands, South Africa and the United Kingdom.

Executive Interview

In your opinion, what are the major challenges hindering agribusinesses in developing countries from attaining global competitiveness and from linking up with the global value chains?

There are several issues; one is land issues that have a lot to do with competition in the global arena as much as competition locally, subsidies – things that are not in the control of the farmer but more in control of the government, the WTO. Basically things like that – things that are exogenous to the farmer. It is not because farmers are not productive or that farmers are incapable of producing in the global stage, but farmers in these developing countries do not have the knowledge, the technology and are therefore at a disadvantage competing with farmers, say from the United States. We just heard that in the US, the average farm size continues to grow and 1,500 acres was the average size of a farm and they have superior technology. John Deere showed us how you do not even need to be driving the combine anymore, it is driven by satellites. But if you look at Africa or developing Asia where people still use buffalos to sow paddy or pick teas manually; two leaves and a bud by hand, you will realize there is no level playing field. On top of all that you have WTO and policies which help subsidize US farmers and EU farmers at the expense of the developing countries farmers. So I see the picture as very challenging from a macro point of view.

Talking about knowledge and the gap between farmers in the developing countries and their counterparts in the developed countries, especially with respect to technology, how do you think farmers in the developing countries can survive this challenge?

The fundamental issue is that there is a vast difference between the technologies used in the West and the developing world. I think where to start in a sense would be partnership driven technology transfer relationships where it would be possible

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for big farmers in developing countries to link up with the value chain, with, maybe, processors or even other farmers in the developed countries and transfer technology. Without that I see it somehow impossible to break this vicious cycle of not having technology, not having technology meaning not being able to climb up the ladder.

In your mind, how do you think Information and Communication Technology (ICT) can help farmers in the developing countries in the delivery of and access to timely and widely available, accurate and credible market information?

I think that is the only saving grace to at least sort of bringing to the same level of technology between the developing and developed world. Like, I said earlier, technology in terms of farming practices, technology in terms of equipment that are used is so different, from buffalos to satellites driven tractors but information technology (IT) is an equalizer. The IT that is available in the United States in 2005 is the same IT that is available in Kenya, in Burundi or in South Africa, as long as the government in these countries do not prevent the people from using IT through bad policies (and I will get to that in a moment). But assuming there are good policies that help people – farmers, students – whoever it is to use IT, then that is the fastest way to bridge this information gap between the developing and developed countries, and especially in agriculture. Say for instance, Sri Lanka is the largest exporter of tea in the world, we produce slightly over 300 million kilogram of tea. Suppose IT is available, the tea garden owners will be able to figure out what the demand is in different locations, what the prices are in these places. Therefore they could perhaps enter into forward contract as with the buyers in Europe, Australia and the United Kingdom, perhaps even America. But right now they are just pretty much groping in the dark. They continue to produce whatever they can produce and hope to sell it in the auction in Colombo, hoping that tea-drinking countries around the world will buy. But you know the Colombo tea auction is a unique location, it is the best in the business, it is the best in the world and you have representation of all countries there on a weekly basis to bid for tea. So that is something that IT could enhance. However, if you look at some other agricultural produce which do not have the luxury of having the largest centre of the world market in that city, in that country, they are so far away from the customers. So I think IT that perhaps has the ability to enter into forward agreements will immensely help farmers in the developing world.

In many developing countries, we know that agribusiness stakeholders - government, Non-governmental organizations (NGOs) and other support service providers have responded to this challenge with various projects. So why does it still remain in most cases?

Yes you are talking more on a micro policy level. Yes people have been attempting to remove the asymmetry in information between farmers and other participants in the agricultural value chains for a long time. Universities have been attempting

various techniques, there are ways in which the agricultural department officers have been collecting this information and publishing it in the newspapers and so on. So at the policy-level, there is acceptance of the problem and there have been several attempts to correct the problem but the problem remains. It remains because the traditional way of collecting information is always after the fact. Suppose you are a market trader, you sell something for a range of prices today, tomorrow the department officer comes and says, hey how are you, and how much did you sell your pumpkins for yesterday? He is going to say you know I sold it for between 20 and 30 rupees. He thinks why should I tell him how much I sold my pumpkins for? So he just tells him between 20 and 30 rupees in the best case, or even some fictitious figure. And he just marks it and reports it. That is wrong information; wrong information is worse than no information which further distorts the market and creates further inefficiencies in the market. So sometimes it is better not to have any information than to have wrong information. And across the world, this is what happens, people go collect information think it is right and they report it. But IT is what takes you out of that corner. You know how you get the information, the right information at the right time. In Sri Lanka, we have seen some work that is being done in this area where information is collected at the right time which is then accurate, which is then credible, which is then independent and disseminated across the island.

Dr. de Silva, I see you have been involved with an ICT powered market information and price gathering system in Sri Lanka. Can you share some of your experience and findings?

I have some very powerful findings. One is even though people talk about ICT for development all around the world and they mention how ICT can help farmers, few projects have actually been implemented. And even of those few, only some have worked and that is because sometimes expectations are too high. People think IT can do wonders and they want to do complex things and they fail. So lesson number one is keep it simple, farmers are not your suit and tie wearing stock-brokers in the city. They are simple, less educated, people who work with their hands. Give to them information that is relevant to them. No need of doing very complex analysis. Just tell him today price of potatoes started in the market at 20 rupees and went up to 30 rupees and now it is at 25 rupees, so what do you want to do. You see, it is gone up and it is coming down so you make your choice; or before coming to the market if he can find out in the market prices of potatoes are now 25 rupees. He then asks himself do I spend further transportation cost and bring it to the market or do I dispose of it in the local market. Before I pluck my cucumber from the farm, I found out for today cucumbers are selling at 4 rupees per kilo. I can have the cucumber on the tree for another one day, do I not pluck it today and hope for a better price tomorrow or do I pluck it today? So these are simple decisions that can be made if simple information is available. So one, keep it simple, make sure that it is disseminated in local languages. There is no point having this in English, people

won't understand it and there is no point having it through high speed internet. So disseminate it in a way that is most usable, most accessible and most meaningful to the farmer; in a very simple way. Phones, both fixed and mobile are the best way. Sri Lanka already has some 2.5 million mobile phones and this is expected to grow to 8 million in three years. We have only some 4 million families so this means 2 mobile phones per family soon. Two, farmers' learning curves are very flat. You know we've gone to the university, done MScs. and PhDs and we feel it is very simple to see how information could enhance the farmer's income. Why doesn't he understand what I am trying to say? Every one should understand having information you will make a better decision than without it. In economics, we learnt every decision is based on ω_t , which is the information available at time, t . So I figure I tell him how much pumpkins are selling at, why can't he make the right decisions, why can't he even find out the price of pumpkins before coming to the market and try to sell pumpkins; but he feels what for? So it takes a while for these people to learn. The last point is, once they find out, look they can actually use this information, and then they will flock to get that information. So in my experience, I have seen a very flat learning curve, which over time is now coming up, going up and more and more people are starting to ask for this information. Also I think the younger the farmer, the greater the interest. So these are some of the key findings.

You just mentioned that there are difficulties with farmers' adoption of complex technologies, especially in a place like Sri Lanka where farmers may not have adequate education and access to electronic facilities. What other ways have you employed in disseminating information among farmers in such an environment?

That is a good question. We have three ways in which we do it now. One is we have display screens in the market and outside. These are large 8.5 by 6.5 feet screens and the market is at night, it starts only after dark. So the screens are illuminated by multimedia projectors, very simple technology. We have also made sure the information is picture-based. So, suppose I am a tomato farmer and I come to the market and I am really interested in tomato, I see tomatoes picture, immediately my eye goes to tomato. This is the only place in the world where prices are depicted through pictures which is very effective because one, the literacy rate of farmers is low. So when he sees tomatoes he knows that is what I want. That is one way of simplifying the dissemination. Two, of course it is on the internet and you have to go to the internet café or telecentre to get it. Then we have a very nice technology where we convert the data into voice. If you call a short code, just three-digit number on any mobile phone in Sri Lanka, you are connected to this system and the data gets converted to voice and you press a number whether you want it on a local language one or two. It will then read out to you the highest price, the lowest price and then average price. So it is just a computer information technology transferring data into voice. Sri Lanka has a population of nineteen million people and right now the telephone growth is very rapid as I said earlier. As of today, many farmers are using phones to access information data which gets converted to voice and that is

excellent. Again what we have done is we have printed calendars and we give the codes for the vegetables. Say the code for tomato is 315 and we print and distribute thousands of these calendars free of charge. The calendar has the phone numbers, so you are suppose to hang the calendars by your phone and dial the number and just put in the code. Next is we are going to be on radio and TV on a daily basis which will display the prices. So we use technology and ICT in a way. I continue to reiterate it is a very simple solution.

That is actually excellent. So with your experience with GGS - The Govi Gnana (Farmer Knowledge) Service in Sri Lanka, do you think that option has successfully aided the strength of farmers' bargaining power?

Most definitely it has. We just watch the farmers when they come to the market in the back of pick-up trucks. They do not own the truck; they just take a ride in it and put their things at the back of the pick-up truck to come to the market. When they arrive, they always look at the signs, they look at the pictures, and they look at the prices. Those days they never did. As soon as I installed it I saw reporters who have gone there and they interviewed the farmer. The reporter asked how much do you sell your tomato and the farmer replied five rupees a kilo. The reporter asked why do you sell it at five rupees per kilo, the small screen says it is ten rupees a kilo (those days we use small screens). Then the farmer says who believes that nonsense, how can the computer tell me how much to sell my vegetables. So the reporter looks for the stall which was actually buying this produce at ten rupees and he takes the farmer to the stall. Then he tells the farmer, look all you needed to do was to look at the screen and you would have doubled the price, and then he does. That is the kind of thing we are building. All we need now is for the farmer to look at the screen and slowly but surely, he will realize if he can say to the buyer/trader, I need fifteen rupees and the buyer says come on I will give you ten rupees, he can say to him look around, if you don't buy it for fifteen rupees I will sell it to somebody else for fifteen rupees because that is the going price. So that immediately builds bargaining power in the farmer.

How do you collect the market information disseminated through the GGS?

We have a network where a number of traders are connected to a central server at the Dambulla market where the GGS pilot is being implemented. Dambulla is the largest agriculture wholesale market in Sri Lanka with a turnover of some USD 300,000 a day. Here, the connected traders have every transaction they enter into recorded in real time. Say a trader does 500 transactions a session (these sessions are in the evening and night), each one will record what produce, how much of it and what price. For the unconnected farmers, we have people with PDA (personal digital assistants) walking around the 12 acre market and uploading it. From any point in the market, the servers are accessible on wireless basis. All what they need

to do is to record the price on the little PDA that they carry in their hand and click enter.

Do you think there are additional strategies to be added to this technology so as to ensure the delivery of the sought after efficiency and profitability, and also to aid farmers' adoption level?

My objective is to have this all around the country to create a virtual exchange so that every farming community will have a place where they receive this information. Perhaps at a small telecentre, village group office or something. What I am doing now is adding forward information. I have got information about all the forward contracts that are signed through banks, that information will appear on the system. So even before I put beans on the ground, I will be able to decide on whether I should put beans on the ground. There is Mr. X and supermarket Y who will be willing to buy my beans at this price when my beans come up which is a much better situation to be rather than put beans without knowing who I can sell it to, and at what price. Also that gets the farmer to release himself from the grasp of the middlemen who otherwise are lending money at an almost usurious expense; you know like 25%, 30% rates. The moment you have got a forward contract, you can take it to the bank and get crop loans using as collateral the produce that will be sold on the forward contract. So if we can get to that level, then we have done a great favor to the farmers in Sri Lanka.

I see that this technology trickles down to helping farmers hedge against both price risks and market uncertainties. Apart from that, how does it strengthen the link between the farmer and other agribusiness participants/stakeholders?

That is what I was saying just a while ago, that this is not just IT system for the farmer. The farmer is linked, the farmer is part of the agricultural cluster; the bank is part of it, the fertilizer company, the phone company, the government, they are all part of it. So the information becomes valuable to everyone. Now from next month, all phone calls into the GGS through Dialog Telekom (www.dialog.lk) Sri Lanka's largest mobile phone operator (who now has two million subscribers) will be toll free. Why does he do that, why does he take the chance of saying okay every call is free on this network? It is because he sees value. For him it benefits not too many farmers but giving the phone to the farmers for free serves as corporate social responsibility, giving him more acceptance and then he will build on that.

Now for the banks, this system is excellent because the banks normally do not lend money to the farmers because they do not have collateral. But if we have forward sales agreement which can be facilitated through the system, then banks can lend money to farmers using the forward contract as collateral. So it strengthens the link the farmer has with the rest of his cluster through this. This is kind of a web; this is kind of glue that sticks farmers to the rest of the stakeholders.

In short you consider this a key success factor for agribusiness practice among rural farmers in developing countries?

Absolutely! I think that still not enough attention is paid to this subject and people still do not realize because people who are in agriculture are not necessarily people who are IT savvy and people who are IT savvy do not understand a damn thing about agriculture. So that is where people like me and you perhaps could play a role because we understand both sides of this scheme. We will be able to show the advantages of IT to the farmers and show the IT guys; look there is a business model out there. So it is going to be a win – win situation and that would be the way to go.

Finally Dr. de Silva, based on the impact of ICT, what do you foresee as potential changes in global agribusiness chains and in what ways would these changes impact on agricultural production and supplies?

I envisage a shrinking world, meaning globalization. Sri Lankan farmers linked with Dubai processors, exporting to the US or some companies elsewhere, because everywhere people are specializing. People trade based on comparative advantage of countries; so I see a world where Sri Lankan tea garden owners will be mixing tea in Dubai centres and then exporting to Europe and so on. I see ICT linking these different players together, I see farmlands becoming larger and larger, and people unable to compete in the global arena falling out and then merging of small farms together. Also IT, the kind of things we are talking about helping farmers move up in the social ladder by being able to get better prices, by fighting poverty through better incomes and then linking up with banks to get loans and so on. So I see ICT playing a very big role in agriculture in the coming years. That is of course besides what John Deere was talking about, the next 80 years is ICT. So I think the application of ICT in agriculture will be across the board, from the most sophisticated satellite technology that drives combine in a 2,000-acre farm in the US to a small potato farmer in Sri Lanka getting the best possible price.

Conclusion and Analysis

The Govi Gnana (Farmer Knowledge) Service demonstrates how an ICT based market information system can be implemented successfully in a developing country. This interview with Dr. de Silva further supports the views of experts that market information disseminated through modern technology can be of enormous benefit to farmers, even in the developing countries. The potential benefits which can be derived from such projects if properly implemented, monitored and managed can evolve agricultural markets which will improve productivity, bargaining power, and market profitability of rural farmers.

It should be noted that even though information technology provides small scale farmers the opportunity to access market information, the benefits they derive from it may be short-lived unless such technology is designed to suit their needs.

Therefore, the success of any agricultural market information project lies not in the level of sophistication of technology used, but in how well it has met the farmers' needs. It should also be noted that farmers in developing countries benefit more from simple but effective price transmission systems, rather than complex ones.

In conclusion, it must be emphasized that the problem of small scale farmers in developing countries is a complex cluster. In many remote areas, other problems like lack of adequate infrastructures including good roads, water supply and access to electronic facilities may need more attention and may serve as pre-requisites to effective use of market information.

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