DISCUSSION OF EXISTING DATA AND DEVELOPMENT OF A MARKET RESEARCH PROPOSAL:

CONSUMER CONFIDENCE IN FOOD SAFETY AND LIVESTOCK PROTEIN SOURCES

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ABSTRACT

This study examines existing data sources concerning issues related to consumer confidence in the uses and sources of livestock protein sources. In addition, this study provides a market research proposal that identifies methods for the collection of data specifically relating to significant changes in consumer confidence and willingness to purchase meat and poultry products. These significant changes may be due in part to consumer knowledge and perceived risks of food safety.
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DEDICATION

Dedicated to Family and Friends

You have helped make this project and my career at Cal Poly a successful four years.

Thank you for your constant love and support!

Dad: My advisor, mentor, and supporter.

Mom: Always quiet fortitude, patience, and strength.

Clay, Latisha, and William: My fellow escapees. Thank you for the memories.

Cameron: Baby of the family and promise of the future.

Troy: Keeping my sane and strong; always making my laugh, love, and live.

My “Other” Family: Thank you for being my family away from home, taking me in under your wings and helping me to grow.

GOD
My Father in Heaven, My Strength, My Comfort, My Protector

All things are possible through Christ, who strengthens me.

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CHAPTER 1

INTRODUCTION

In 1987, Bovine Spongiform Encephalopathy (BSE) was discovered in the United Kingdom, shortly followed by reports of tainted herds in France, Germany and many other countries of Western Europe. The disease was first identified in West Sussex herd in November 1986. Ministers were told of the disease, but at the time it was not known whether the disease was transmittable.

According to veterinarians and scientists who were selected to study the new disease, they concluded that BSE was a "prion" disease and suggest that the new disease could have been caused by infected animal carcasses or offal processed into cattle feed. Prions are mutated proteins that cause fatal brain damage. The brains of sufferers become spongy and full of holes. Typical symptoms include loss of coordination and dementia.

Due to the speed at which the disease spread and contaminated cattle herds in the United Kingdom, Germany, and France, consumer and government attention to food safety immediately heightened. According to the BBC News Network, Farm Ministers in Europe approved on December 5, 2000 a six-month ban on meat and bone-meal in animal feed, in a drive to halt the spread of mad cow disease. This announcement followed the temporary ban on meat and bone-meal in animal feed by the European Commission in November 2000.

1 BBC News “BSE and CJD: Crisis Chronology” (2002)
3 Ibid.
4 BBC News “Audio and Video Highlights of the Spreading BSE Crisis Across Europe” (December 2000)
At the peak of the BSE crisis in the UK, three out of every 1000 were found infected with BSE.\(^5\) In 1994, the use of animal protein in animal feed in banned throughout the EU, with the exception of Denmark.\(^6\) As reported by the BBC News Network, it is estimated that since 1996 about 4.5 million cattle have been slaughtered to prevent the spread of BSE. This has cost more than £1.4 billion in compensation to farmers and has cost the government more than £575 million to dispose of the carcasses.\(^7\)

The effect that BSE has had on consumer confidence in food safety is important to identify, especially considering the link between BSE and animal protein sources found in animal feeds. According to veterinarian Scott Haskell of the University of Minnesota Extension, BSE is transmitted to cattle when they eat contaminated meat and bone meal in their feed. Furthermore, Haskell states that there is no evidence that transmission to cattle occurs in any other way. “No evidence exists that BSE transmission in cattle occurs other than through feed. It is very important not to feed cattle any protein that comes from a ruminant, such as meat and bone meal.”\(^8\)

According to the Cornell Extension Service, the US Food and Drug Administration Due issued a rule in August 1997 prohibiting the use of certain animal protein sources in ruminant rations. The FDA also stated that the rule was designed to minimize the risk of BSE in ruminant animals and that there have been no documented cases of BSE in the United States.\(^9\) In an article by Dr. L.E. Chase, he states how this rule by the FDA impacts US livestock and dairy producers, including the yes of products prohibited and not prohibited by the FDA ruling. According to Dr. Chase, the rule only applies to products

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\(^6\) Ibid.  
\(^8\) Kurtz, Joseph “Livestock Producers Hope Mad Cow Disease Will Not Reach US” (March 2001)  
\(^9\) Chase, L.E. “Bovine Spongiform Encephalopathy” (2001)
derived from the rendering of livestock, including meat and bone meal, meat meal, and meat. The rule does not include products derived from poultry, marine, or vegetables, not does it include tallow or fat, as items are not animal proteins. These measures by the government have also led to the precautionary approach of pre-market approval requirements established by law for food additives, animal drugs, and pesticides, stating that products are not allowed on the market unless, and until, they are shown by producers to be safe to the satisfaction of regulatory authorities.

Although consumer demand in the United States seemed to remain relatively stable following the May 2003 announcement of BSE-infected herds in Canada, if more BSE cases are identified, the odds are high that U.S. beef demand will drop, according to Kansas State University agriculture economist James Mintert. Instead of declining demand for meat and poultry, US consumers increased demand for information BSE. This demand was met through the creation of an informative site developed by the FDA, educating consumers regarding the effect of BSE on livestock and potential affects of the disease upon the US Food Supply and family health.

The effects that BSE has had upon producers regarding their protein source choices is evident, causing the disease to be directly linked with consumer concerns regarding the safety of meat and poultry products purchased and consumed. In addition, issues such as consumer concerns regarding the uses of biotechnology and genetically modified food products have also affected producers and their sources for animal protein. Companies

10 Ibid.
11 U.S. Food and Drug Administration, United States Food Safety System (United States Department of Agriculture, 2003).
13 American School Food Service Association “FDA Responds to Consumer Demand for BSE Facts” (May 2001).

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and industries that provide initial inputs into the livestock growth and production cycle such as animal health, research, and pharmaceutical companies also become accountable to consumers, processors, and producers, as they also make decisions regarding protein sources selected for use in feed rations and supplements marketed and sold to livestock producers.\textsuperscript{15}

The nutritional importance of protein has been widely recognized since Jons Berzelius, a Swedish chemist, underscored the essentiality of dietary proteins for animals and man. Much research has been done to extract, separate, and identify protein sources from cereal grains, fiber and forage crops, oilseed, fish processing, and other plants not currently used as major protein sources.\textsuperscript{16} When considering many of these sources, biotechnology has already been used to improve chemical and pest resistance, such as Round-up Ready Soybeans as well as BT corn varieties. The myriad of issues that affect protein sources and use of protein in livestock feeds has the potential to impact consumer acceptance and rejection of products derived from these protein sources.

This project will define various protein sources, as well as issues related to the development and use of protein sources in food animal production. In an effort to understand consumer confidence in food safety and acceptance of protein sources, this project will contain information regarding existing consumer confidence data sources and a market research proposal to determine consumer confidence in animal food products based upon sources of protein used in animal feeds and related food safety issues. The market research proposal will aim to identify the relationship between protein sources and

\textsuperscript{15} Theresa Stoner (Interview: April 2003)
consumer confidence in food safety. In addition, the market research will provide an opportunity for collecting consumer data with specific emphasis on animal protein sources. This project will culminate with recommendations and conclusions regarding existing and potential sources of data measuring consumer confidence in protein sources. In addition, a cost analysis of the secondary data sources will be presented. The market research proposal will include a projected budget and time requirements. By comparing the costs related to obtaining existing data sources versus conducting a market research study, the advantages and disadvantages to choosing either data collection option will be highlighted.

Problem Statement

Are consumer purchasing decisions and attitudes affected by confidence in food safety and protein sources used in producing certain food products, and is the animal health industry affected by changes in consumer confidence towards food safety, particularly food products derived from various protein sources?
Hypotheses and Objectives

Hypothesis

1. Consumer confidence in food safety is significantly affected by confidence in meat products based upon concerns that relate to animal protein sources used in livestock feed rations.

This hypothesis may not be tested and evaluated by the research conducted for this project, but rather be tested by the data collected through existing data sources and the proposed market research.

Objectives

1. Identify protein sources and issues that may affect consumer confidence regarding these protein sources and developing technologies, which affect the use and implementation of protein sources in the animal food production cycle.

2. Define a market research study that can be implemented to identify consumer confidence in food animal protein sources and the impact to Elanco business.

3. Develop recommendations regarding the issues of consumer confidence in food animal production use of protein sources and the impact of the growing significance of consumer confidence upon the animal health industry.
**Significance of Research**

Consumer confidence in products purchased for home and family are becoming increasingly significant as food producers and processors meet the challenges and issues of food safety in the agricultural industry.

Following recent food safety scares, the U.S. government has completed a risk analysis on *Salmonella enteritidis* in eggs and egg products which included the first farm-to-table quantitative microbial risk assessment, *E. coli* 0157:H7 in ground beef and the transmission of Bovine Spongiform Encephalopathy by foods, and *Listeria monocytogenes* in a variety of ready-to-eat foods.¹⁷ These food safety issues and concerns being faced by government agencies, livestock producers, and food processors have not only become significant but so has the influence of public opinion and the affects of consumer reaction due to these food safety issues.

By assessing consumer confidence in food animal protein sources, livestock producers will be able to identify how consumers may respond to changes in feed rations and other initial inputs used when producing livestock. In addition, companies in the animal health industry will be able to associate consumer perception regarding the variety of components in feed rations with the public’s understanding of issues pertaining to biotechnology, genetically modified products, and the use of hormones in livestock production. This is an important factor because much of the research conducted regarding these uses of technology in the livestock industry is done by animal health and research companies.

¹⁷ US Food and Drug Administration
Functional Definitions

Consumer

According to the Oxford English Dictionary, a consumer is defined as an individual who purchases goods or pays for services.\(^\text{18}\) For the purposes of this study, a consumer is also defined as an individual who makes household purchasing decisions and whose willingness to purchase food products may be significantly affected by perceptions of risk and perceived knowledge of food issues.

Consumer Confidence

Consumer confidence is defined as the consumer’s acceptance or rejection of a product based upon previous or future expectations regarding specific product attributes. Consumer confidence is measured on a scale of degrees of acceptance, ranging from “Definitely Acceptable” to “Not At All Acceptable.” In addition, consumer confidence is affected by consumer attitudes and beliefs in regards to food safety.

Attitudes

According to Aaker and Day, attitudes are mental states used by individuals to structure the way they perceive their environment and guide the way they respond to it. There is three related components generally accepted to form an attitude: a knowledge

component, an affective component, and an actions component, each of which provide a
different insight into a person’s attitude.\textsuperscript{19}

\textbf{Purchasing Behavior}

Jekanowski, Williams, and Schiek define purchasing behavior as the function of
several factors, including perceptions of quality and value of the product in question, prior
shopping experiences, the degree to which consumers build loyalties to particular brands of
products, as well as demographic composition of the household.\textsuperscript{20}

\textbf{Protein}

According to Matsushima, protein is chemically classified as an organic nutrient
and makes up 13\% of a typical livestock feed ration.\textsuperscript{21} For the purposes of this study,
livestock protein sources include protein added into feed rations of livestock being raised
primarily for food processing and production, e.g. beef cattle, hogs, poultry, etc. These
food animal proteins include corn, soybeans, animal byproducts, fishmeal, or other sources
of protein developed by the animal health and nutrition industry.

\textbf{Food Safety}

According to Caswell, food safety is a premier attribute for consumers.\textsuperscript{22} In
addition, food safety is the perceived and actual safety of food products consumed in the

\textsuperscript{19} Aaker and Day, 204
\textsuperscript{20} Mark D. Jekanowski, Daniel R. Williams II, and William S. Schiek, Consumers’ Willingness to Purchase
Locally Produced Agricultural Products (Agriculture and Resource Economic Review, April 2000)
\textsuperscript{21} Ibid.
\textsuperscript{22} Julie Caswell, Food Safety, What Is It (Western Coordinating Committee on Agribusiness, 2003)
home, at restaurants, and through food service institutions. Food safety may also defined by the industry as the elimination of risks for individuals to consume food products based upon the probability of contaminants which may be hazardous to human health.

**Initial Input**

An initial input is defined as a unit added to a product at the beginning stages of the processing and production of a food product. For the purposes of this study, initial inputs will be considered for meat and poultry products made prior to the slaughter and processing of animal carcasses, e.g., feed rations, feed supplements, pharmaceuticals, etc.
The feasibility of a market research project will include the identification of a market research proposal, benefits and costs of the proposed market research, and recommendations for acceptance of the market research proposal. The market research proposed will be to discover consumer confidence in food animal protein sources, which is a growing concern for the animal pharmaceutical industry and especially the Elanco Animal Health Company.23 This research will culminate in a market research proposal and strategic action plan for Elanco Animal Health.

**Market Research**

Aaker and Day define market research as the way in which an organization is linked with its market environment. “It involves the specification, gathering, analyzing, and interpretation of information to help management understand the environment, identify problems and opportunities, and develop and evaluate courses of marketing action.”24 By following this definition, market research can be utilized by companies and industries as an aid in decision-making. This form of research can be used to form a strategic plan, which usually has a horizon of more than one year.

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23 Theresa Stoner, “Re: Senior Project” (4 April 2003)
Strategic Planning

A strategic plan focuses upon strategic decisions, which are major questions of resource allocation with long-run performance applications.\textsuperscript{25} This type of planning allows interested groups and individuals to consider the affects of market size and characteristics, technological developments, and changes in the environment that should be explored. In addition, strategic planning allows for the identification of problems and opportunities in the market and suggestions for direction that an organization can make in response to new markets, new products, or both.

Following these guidelines, the strategic action plan which will be developed for possible implementation by Elanco Animal Health will include: Research and analysis, identification and development of allies, political advocacy, media communications, internal and external resources and needs, an action calendar, strategic recommendations, and projections regarding best, worst, and most likely outcomes.\textsuperscript{26}

Market Research Methods

Regarding research methods used in food safety studies and consumer market research, several methods have been used, both qualitative and quantitative, differentiated by the methods of analysis and interpretation. According to Redmond and Griffith in the article, “Research Methods and Consumer Food Safety,”

Quantitative techniques, which include questionnaires and structured interview methodologies, are appropriate when the issue is known about, relatively simple and ambiguous, and amenable to valid and reliable measurement. Such methods

\textsuperscript{25} Aaker, 11
\textsuperscript{26} Theresa Stoner, Personal Interview. (14 February 2003).

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generate data that can be presented numerically and which can be subject to statistical analysis.27

When collecting consumer food safety data, both self-completion surveys and interviews, collectively called surveys are used. These methods are both quantitative-based. The use of interviews was found to be the most commonly used for obtaining consumer food safety data, accounting for 48% of studies. Self-completed surveys were also commonly used, accounting for 27% of studies. In addition, a majority of these studies, self-completed survey and interview, were conducted in the United States and the United Kingdom (UK).

In the same article, Redmond and Griffith describe qualitative research methods, which study people in natural social settings.

Qualitative research utilizes unstructured interviewing and focus group techniques as a means of data collection. Overall aims of this type of research are generally to study people in the natural social settings and are essential for exploring new topics and obtaining an insight into complex issues. However such techniques produce data not do readily open to statistical interpretation.28

Qualitative research methods utilized in consumer food safety data collection include focus group and observation studies. The direct observation technique accounts for 17% of studies conducted and focus groups account for 8% of studies conducted. Observational studies are most commonly used in the UK, although some observational studies have been conducted in Australia and the US. Focus groups were used most often in the UK and US.

28 Ibid.
Attitude Measurement

Attitude measurement is a tool that may be used by management to learn something about the basic orientation or attitudes of present and prospective clients. Included within these attitudes is the information that they have, their feelings of liking and disliking, and their intentions to behave. This culminates in understanding, for instance, consumer behavior towards a particular product because attitudes are believed to be precursors of behavior. Attitudes, as compared with behaviors, are more feasible to observe and interpret than actual behavior. Attitudes also allow the greatest advantage over behavior measurements in their capacity for diagnosis or explanation. Attitude measurements can be used to help learn which features of a new product or concept are acceptable or unacceptable, as well as the perceived strengths and weaknesses of competitive alternatives. Insights can be gained into the process by which choice decisions are made: what alternatives are know and considered? Why are some rejected? What problems are encountered with the products or services that are used?29

Attitudes, according to Aaker and Day, are “mental states used by individuals to structure the way the perceive their environment and guide the way they respond to it.”30 Attitudes are further defined by three generally accepted components that provide different insights into a person’s attitudes: a cognitive or knowledge component, a liking or affective component, and an interns or actions component.

The knowledge component represents a person’s information about an object and includes the awareness of the existence of an object, beliefs about the characteristics or attributes of the object, and judgments about the relative importance of each of the

29 Aaker, 204
30 Ibid.
attributes. Secondly, the liking component summarizes a person’s overall feelings toward an object, situation, or person on a like-dislike or favorable-unfavorable scale. When there is a number of alternatives that can be chosen, liking can then be described in terms of preference for one alternative over another. The final component, the intentions component refers to a person’s expectations of future behavior toward an object.

“Intentions are usually limited to a distinct time person that depends on buying habits and planning horizons…it incorporates information about a respondent’s ability or willingness to pay for the object or otherwise take action.”31

Attitude Measurements Scales

Attitude variables include beliefs, preferences, and intentions, and are typically measured with rating scales. These scales provide respondents with a set of numbered categories that represent the range of possible judgments or positions. Because attitudes regarding consumer confidence in food safety are considered complex, it may be often unrealistic to attempt to capture the full picture with one overall attitude-scale question. Attitude measurements must be both accurate and useful, contributing validity, reliability, and sensitivity, to the study.

An attitude measurement is valid if it measures what it is supposed to measure and differences in attitude scores will reflect differences among the objects or individuals on the characteristic being measured. Reliability of an attitude scale is easy to measure and can be classified according to whether or not the scales measure stability of results over time. Finally an attitude scale’s accuracy is affected by the scale’s sensitivity, or ability to

31 Aaker, 205
discriminate among meaningful differences in attitudes. Sensitivity is achieved by increasing the number of scale categories; however, the more categories there are, the lower the reliability.

According Aaker and Day, the scale that is very “appropriate” for determining knowledge, affect or liking, and action is the Itemized-Category Scale. The Itemized-Category Scale may be adapted in many different ways, including whether or not all the categories are labeled versus only labeling polar categories; whether there is a defined neutral point or provision of a “Don’t Know” category; if the categories are equally or unequally balanced between favorable and unfavorable categories; and, whether a comparison judgment is required.

There are a variety of other methods, generally used with complex issues, that have been developed to measure a sample of beliefs and then combine the set of answers into some form of average score. According to Aaker and Day the most frequently used methods are the Likert, Thurstone, and semantic-differential scales. Of these scales, the one that is “Sometimes Appropriate” when measuring knowledge, affect or liking, and action is the Likert Scale. The Likert Scale requires the respondent to indicate a degree of agreement or disagreement with a variety of statements related to the attitude object. It is also called summated scale because the scores on individual items can be summer to produce a total score for the respondent. The assumption of this scaling method is that each of the items or statements measures some aspect of a single common factor, otherwise the items can not be legitimately summed.

32 Aaker, 223 (Table 8-3)
33 Aaker, 211 (Figure 8-1)
Consumer Confidence

Consumer confidence is a factor that has become increasingly important in agricultural and food processing operations throughout the United States, especially with the widespread publicity of *E.coli* food poisoning outbreaks.\(^3^4\) Consumer confidence has been studied in great detail with regards to food safety, however not in as much detail regarding the food animal protein sources used by livestock producers.

Much research has been done in recent years regarding consumer confidence in food safety of products purchased for the family and the home.

Consumers believe that they are primarily responsible for food safety, although this responsibility is shared with grocery stores, government agencies, and manufacturers. When food safety concerns do occur, consumers are most likely to suggest that they occur at manufacturing or processing plants.\(^3^5\)

Due to these observations made regarding food safety issues at the consumer level, it is important to the agriculture and food processing industries that food safety be of the highest concern when manufacturing and processing food products. This concern is important at all levels of food production and processing, including pharmaceutical companies, laboratories, cow/calf operations, slaughter houses, and supermarkets.

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\(^3^4\) Food Marketing Institute, “Trends in the United States 2002” (Food Marketing Institute, Washington, D.C. 2002), 1
\(^3^5\) Ibid
Protein Sources

Food animal protein sources include those protein sources that are added to the feed and diet of the animal. Using beef cattle as an example, protein is one of the six basic nutrients found in varying quantities in animal feeds which include: water, ash, fat, crude fiber, nitrogen-free extracts, and protein. These nutrients in the feeds do not necessarily satisfy the nutritional requirements of the animal. Nutrient contents vary from batch to batch due to various causes. Protein is chemically classified as an organic nutrient and makes up 13% of a typical feed ration. Selection of protein supplements usually depends upon the cost per unit of protein. For example, if cottonseed meal is priced at $200 per ton with a guarantee of 45% crude protein, and soybean meal is $210 per ton with 46% crude protein, the price advantage would go to cottonseed meal because each pound of protein in cottonseed meal costs 22.2 cents, while a pound of protein in soybean meal costs 22.8 cents.

Factors to Consider

The use of certain protein sources in animal feed rations has the potential to span a wide variety of topics regarding consumer acceptance of end products. These factors include consumer acceptance of biotechnology, perceptions of food safety in relation to recent outbreaks of BSE, purchase behaviors in response to consumer education and

37 Ibid.
methods used by consumers to update information regarding the safety of food products, and finally public trust and confidence in relation to the safety of a country’s food supply.

Biotechnology and Genetically Modified Agriculture

Biotechnology is an issue that has the potential to affect consumer acceptance of food products based on livestock protein sources. This is due to the use by livestock producers of Bt corn, a protein source in which a corn plant is modified to produce its own Bt protein which is a naturally-occurring soilborne bacterium that selectively kills a specific group of insects. By modifying corn plants to produce its own Bt protein, a more consistent performance can be obtained as compared to synthetic insecticides.

In a study conducted in 1992 among consumers in five states, researchers concluded that, “Attitudes toward use of biotechnology were generally positive, but selective: plant applications were more approved than animal.” According to the working paper by the Food Policy Institute, “Consumer Acceptance of Food Biotechnology: Willingness to Buy Genetically Modified Food Products,”

Biotechnology advocates emphasize the potentials benefits to society in terms of improved products that will deliver distinct benefits to mankind. On the other hand, opponents often view biotechnology as an unnecessary interference with nature that has unknown and potentially disastrous consequences.

The issue of using biotechnology in food products is one of high contention and debate, especially in recent years. It seems that everyone has an opinion, as government

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39 University of Minnesota, Bt Corn and European Corn Borer (University of Minnesota Extension, 1997)
41 Ferdaus Hossain and et al, Consumer Acceptance of Food Biotechnology: Willingness to Buy Genetically Modified Food Products (Food Policy Institute, Rutgers University, June 2002), 3.
agencies and politicians at an international level have gradually addressed the issue. For instance, until recently, Europe imposed restrictive regulations on GM crops in any portion of food system. Countries such as India and Brazil have refused to approve genetically modified crops.

In the US, transgenic crops entered the food and feed system without evoking major public resistance. Several surveys conducted 1992-1997 discovered broad approval among U.S. consumers for the application of biotechnology in food production.\textsuperscript{42} In a 2001 study by Moon and Balasubramanian discussed by the Food Policy Institute in the same article, consumer acceptance of biotechnology was significantly related to consumer perceptions of risks and benefits.

\textbf{Perception of Risks and Benefits}

Consumer purchasing decisions can be severely impacted by consumer perceptions of risk and benefits. For instance, a 1994 Food and Drug Administration telephone interviews with 1,620 people showed that red meat was considered at high risk for food poisoning by 24% of the individuals surveyed. When questioned regarding the source of food safety problems, only 3% indicated that farms were the source of food safety problems.\textsuperscript{43}

\textsuperscript{42} Ibid.
\textsuperscript{43} Woodburn, 2.
BSE (Bovine Spongiform Encephalopathy)

Recent outbreaks of BSE in Canadian and European food systems may also affect consumer acceptance of food products based upon protein sources selected for use by livestock producers. The cause of BSE, or Mad Cow disease as it is more commonly known, is not yet known, although according to the Wisconsin Department of Agriculture, Trade, and Consumer Protection, scientists believe that proteins in the animal's brain called prions somehow become abnormal. The cause of this change is unknown, but so far bacteria and viruses are not considered likely causes. BSE is not contagious like bacterial or viral infections. Cattle, the only animal species that appears to be affected by the disease, contract BSE from feed containing bloodmeal or bonemeal from infected animals. BSE has not yet been discovered in cattle herds in the US, although Canadian officials confirmed a single case of the disease in an Alberta heard on May 20, 2003.

In a paper that will be presented at the 2003 annual meeting for the American Agricultural Economics Association, Jin and Koo from North Dakota State University studied shifts in demand for beef by Japanese consumers. Studies focused on demand of beef following the September 2001 outbreak of BSE in Japan, specifically the affect that BSE has had upon the livestock industry, consumer demand, and confidence in food safety is discussed. The paper also discusses the impact that information regarding food safety of food dependant upon country of origin and overall product identity. These impacts are a measurement of consumer responses to food safety issues, particularly in relation to livestock diseases such as BSE.

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44 Wisconsin Department of Agriculture, Trade and Consumer Protection, BSE and Foot and Mouth Disease (Wisconsin Department of Agriculture).
45 MSNBC News Services, No New Canadian Cases of Mad Cow (MSNBC News Services, 29 May 2003)

Love, 21
New information about the safety of an agricultural product can stimulate a sudden upheaval of public concern, resulting in pronounced reduction in demand for the product. Consumers’ responses to food safety information can have potentially significant consequences within the food production industry and the international trade of agricultural and food products. If a food safety related panic creates an interim or long-term upheaval in purchasing patterns for a certain food, it could result in a shift in market demand for the food. Current concern over the declining level of beef consumption in Europe and East Asia, stemming from the outbreak of Bovine Spongiform Encephalopathy (BSE), known as mad-cow disease, provides a good case study for changes in consumer demand due to food safety information.46

Consumer Education

One of the most important factors in the demand of products by consumers is the method by which consumers have been educated regarding food safety issues. In addition to the level that consumers are educated regarding the products that they purchase factors in the frequency at which consumers are educated regarding food safety. (Education in this sense does not necessarily apply to education received from an institution, although it may be a factor in consumer decision-making.)

There are several areas of consumer education, according to economist Julie Caswell that may impact consumer demand and confidence towards certain food products.

First, we know much more scientifically about the links between diet and health than we did in the past. Second, the typical household's expertise in food handling and preparation appears to have declined, particularly with the demise of the full-time homemaker who specialized in such knowledge. Third, the makeup of the food supply has shifted toward products that may pose greater food safety risks:

chicken, fish and shellfish, imported produce and processed products, chilled foods, micro waved products and leftovers, and restaurant-prepared meals. And, fourth, the U.S. regulatory system probably deteriorated absolutely, and certainly relative to the task at hand, in the 1980s.  

These issues, particularly links between diet and health and the shift toward products such as chicken, fish and shellfish have potentially the greatest affect on food safety and consumer education regarding food products. Education, according to Caswell, would help consumers make risk assessments when making food-purchasing decisions. When making these purchasing decisions, consumers deal with perceived risk rather than quantitative risk assessment. The gap between risk perception and risk assessment is attributed much to the differences in information made available to consumers and the evaluation of risks made by each consumer.

Although Caswell’s article focuses many of her comments in regards to the use of pesticides by industry and the traces of such chemicals remaining on products purchased in grocery stores, the use of pesticides can be compared to the use of other inputs such as a variety of protein sources used in livestock feed rations. Just as consumers have become increasingly aware of pesticides being used on produce products, there is the distinct probability that protein sources will be joined with pesticides as inputs used in food production which may affect consumer demand and confidence in food safety related issues.

48 Ibid, 62.
CHAPTER 3

METHODOLOGY

Consumer confidence in protein sources is important to identify due to recent food safety issues that have led to human death and serious disease, issues which have been directly attributed to the protein sources used in livestock production. These food safety issues have a potential impact upon the agricultural industry, especially when considering the impact that these food safety issues have on consumer confidence. Consumer confidence in food safety has the ability to affect all areas of agriculture production and processing, regardless of relationship to past and present food scares or concerns.

Expectations

The expectations of this project are that the following statements will be true:

Data sources regarding consumer confidence in food safety and related issues exist and are available from universities, private and non-profit organizations. Because the original intent of this project was to identify sources of consumer confidence, some attention will be given to listing possible sources of data that relate to consumer confidence and protein sources. However, secondary research has shown that many of the studies that measure consumer confidence do not specifically measure with regards to protein sources. Therefore, a result of the research in addition to the identification of existing data sources will be a strategic plan including a potential market research project which would aim to
identify consumer confidence in regards to food safety concerns revolving around the uses of various protein sources by livestock producers.

*Consumer confidence in food safety is a significant factor in determining consumer confidence in food animal protein sources.* In addition, this consumer confidence is based upon exposure to food safety issues through media sources, and consumer confidence has declined at a faster rate, reflecting the affect of food safety scares and will increase at a slower rate to reflect changes made in the livestock and animal health industries to prevent future food safety concerns.

*Consumer confidence in food animal protein sources is significant to the animal health industry and related industries.* In addition, consumer confidence impacts the livestock and food processing industries, and consumer confidence has increased significantly since 1990, following a period of intense media, public attention, and focus on food safety scares which related to human and livestock sickness and death.

**Data Collection**

Data collection for this project will consist of mostly secondary data, including articles, books, and research papers specifically related to consumer confidence and issues regarding food safety. Some data will be collected via telephone and email interviews with individuals, organizations, or agencies that have already conducted or are currently conducting consumer confidence research and its affects on the agriculture industry. In addition, these individuals and organizations have most likely published their findings in peer-reviewed journals or have presented their work at a professional conference.
Some of the organizations that potentially have information available regarding consumer confidence include the Food Marketing Institute and the Animal Health Institute. The Food Marketing Institute (FMI) conducts programs in research, education, industry relations and public affairs on behalf of its 2,300 member companies, food retailers and wholesalers, in the United States and around the world.\textsuperscript{49} Similarly, the Animal Health Institute is a trade association that represents manufacturers of animal health care products - the pharmaceuticals, vaccines and feed additives used to produce a safe supply of meat, milk, poultry and eggs, and the veterinary medicines that help pets live longer, healthier lives.\textsuperscript{50}

Government-related sources of data may be the Economic Research Service or the Agriculture Research Service. The Economic Research Service (ERS) is the main source of economic information and research from the U.S. Department of Agriculture. Located in Washington, DC, with approximately 450 employees, the mission of ERS is to inform and enhance public and private decision-making on economic and policy issues related to agriculture, food, natural resources, and rural development.\textsuperscript{51} In comparison, the Agricultural Research Service (ARS) is the principal in-house research agency of the U.S. Department of Agriculture (USDA). ARS, one of the Research, Education and Economics (REE) agencies, is charged with extending the Nation's scientific knowledge with 22 National Programs, with research projects in agriculture, nutrition, technology, the environment and other topics that affect the American people on a daily basis.\textsuperscript{52}

\textsuperscript{49} Food Marketing Institute (Website, Sept 2001)
\textsuperscript{50} Animal Health Institute, (Website, 2002)
\textsuperscript{51} Economic Research Service, About ERS, (Website, 12 May 2003)
\textsuperscript{52} Agriculture Research Service, (Website, 24 Apr 2003)
In addition to the organizations and agencies that can be contacted to collect secondary data, information may also be collected from individuals in the private, government, and educational sectors who have experience dealing with market research, consumer confidence, or livestock issues such as protein sources. John Beckett, a professor in the Cal Poly Animal Science Department, specializes in beef cattle production, and holds an M.S. in Animal Nutrition and a Ph.D. in Endocrinology. He teaches Market Beef Production and animal science seminar courses. His research interests include the nutritional factors influencing reproduction in cattle, and development of computer management tools to increase enterprise productivity. Specialties: Beef Cattle Production; Computer Applications; Reproductive Endocrinology. In regards to issues that may affect consumer confidence, Dr. Greg Price is a researcher for the Field Crops Branch. Dr. Price received his doctoral degree from Purdue University and has co-authored an article regarding farm-level effects of adopting biotechnology.

Many individuals connected with U.S. and international educational institutions may also be sources for collecting secondary data, including Neil Hooker, who is an Assistant Professor in the Ohio State University Agriculture, Food and Environmental Sciences Department. Professor Hooker is an author and co-author of several articles discussing consumer acceptance of biotechnology foods. In addition, Dr. Wallace Hoffman, Professor of Economics at the Iowa State University, was the principle investigator in the Economics Annual Progress Report and co-author on several articles addressing consumer acceptance on GMO/biotech foods. Finally, Paola Bertolini, of the Dipartimento di Economia Politica, Facoltà di Economia, Modena, Italy is a researcher and

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53 Cal Poly Animal Science Department Faculty, (Cal Poly State University Animal Science Department Website)
has recently completed projects and articles for presentation at conferences this summer with Marianne McGarry-Wolf, a Cal Poly AGB faculty member.

The secondary data being collected for this project may be obtained either by purchase or at no cost, depending on the data being considered and from whom the data would be obtained. Potential sources of existing data will be identified, rated based upon descriptions of each data source as provided by institution or company, and include recommendations of whether the source should be purchased or used by the Elanco marketing department.

Sources that may be purchased can be obtained from companies such as Yankelovich Partners. Yankelovich is a marketing consultancy specializing in lifestyle trends and customer targeting solutions. Yankelovich MONITOR® predicts the forces shaping consumer lifestyles and behavior and identifies opportunities in the marketplace for our clients.54

The second category of secondary data includes those sources that can be obtained without charge. These sources will be rated for relevance to the project topic and included in the final recommendations as sources that should or should not be utilized. Many of the organizations, agencies, and individuals who have access to these sources have previously been identified, with the exception of Elanco Animal Health, who has been the source of several which examine consumer expectations in agriculture and consumer attitudes towards antibiotic use in animal health.

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54 Yankelovich Partners, (Website)
**Data Analysis**

Prior data analysis, the focus of evaluating data will be primarily dealing with problems associated with omissions and inconsistencies. While these are concerns normally identified after conducting a questionnaire and prior to data analysis, it will be extremely important following the collection of various sources of secondary data because these problems will become significant as data accumulates and is prepared for presentation.

Omission problems that may become significant involve information that is omitted from articles collected as secondary research. These omissions, made by authors as an attempt to concisely report information that specifically dealt with their interests and concerns, are not very noticeable and have the potential to affect conclusions made from these sources of secondary research.

Inconsistencies may also affect the validity of secondary research because when sources of secondary data are compared, the conclusions and findings may be inconsistent. For instance, due to differences in data collection and methodologies utilized, research results and conclusions may differ from study to study. However, these differences can have an impact on the validity of conclusions made from the span of secondary research collected and assimilated for the purposes of this study.

After dealing with these two basic problems, omissions and inconsistencies, data analysis will be conducted by defining strengths and weaknesses of the secondary research and data collected. These steps will help to organize data into groups defined by the strength of relationship between project objectives and each study. Identifying strengths
and weaknesses will also help in the final area of data analysis for this project, hypothesis evaluation, conclusions, and recommendations.

The second objective in data analysis for this project will be conducted after a study proposal has been drafted. From this proposal, benefits and costs will be identified and analyzed as a component of the project. Because these benefits and costs will be important to final conclusions and recommendations associated with this project. Benefits and costs will be determined by comparing the proposed research study with the studies collected and analyzed as secondary research. Comparisons between studies will be made by focusing on the strengths and weaknesses associated with the proposed study and collected studies.

Data Interpretation

Interpretation of data will be achieved by focusing on the objectives of each study, determining the how well the objectives are accomplished, and then reevaluating the strengths and weaknesses determined in data analysis. Interpretation will be done solely for the purposes of presenting the information gathered and evaluated.

Further interpretation of the studies collected may be necessary to accurately compare the various studies to the hypotheses and objectives of this study and to the proposed study. In addition, interpretation may be used to compare those studies, which may not specifically relate to food animal protein sources.

It is anticipated that some data sources will be identified, used, and recommended which may not completely relate to the project topic. For instance, some of the data
sources that may be collected will be identifying consumer confidence in food safety, biotech, and GMO foods. When these data sources are used, relationships between protein sources and the issue(s) identified in a particular data source will be identified and interpreted to show the relationship.

In addition, further interpretation may be required to completely satisfy the objectives of the project. This will include analysis of information sources and recognition of related projects and research whether currently being conducted or planned for future research. Interpretation is an essential of this project specifically because this information will be presented to members and representatives of the Elanco Animal Health Company following completion. In order to best present the material, it should be interpreted so that those participating in the presentations will understand the scope and significance of research being conducted.

Assumptions

One of the main assumptions of this project is that food animal protein sources are perceived as related to food safety and biotechnology. This significant assumption is made due to recent mad cow disease outbreaks in Canada.\(^55\) It is an assumption of this project that due to this and other food safety issues and incidents, consumers automatically associate these issues and incidents with personal concerns regarding food safety. These associations are then the basis for confidence in the food supply, and ultimately confidence in actions to contain food safety incidents by industry and government groups.

\(^{55}\) Anne Underwood, Adam Roger, and et al, *Cannibals to Cows: The Path of a Deadly Disease*, (Newsweek Online, 12 March 2003)

Love, 31
A final assumption is that biotechnology is related to food animal protein sources. This association is due to protein sources such as corn and soybeans increasingly being grown as genetically modified plants. Genetic modification is a factor that is may not be well known or understood by consumers, and has the potential to affect consumer confidence in food animal protein sources used in feed rations and protein supplements.

**Limitations**

The limitations of this project will be determined by the success of collecting secondary research. Because this project is a study on the feasibility of conducting a particular market research study, this project will be limited by factors associated with time and resources. The company has requested recommendations for purchasing data sources that will answer the problem statement. Since no research has been found which specifically investigates consumer confidence in food animal protein sources, the project will also include a market research proposal. A final limitation may be secondary research regarding sources, uses, and other supporting information regarding food animal protein sources.
CHAPTER 4

DEVELOPMENT OF THE STUDY

Focusing on the data collected and proposed for collection, this chapter will describe the secondary data sources discovered and present a market research proposal. This research proposal is designed to provide an option for collecting primary data regarding consumer confidence in food animal protein sources and provide a research study that will accurately reflect the objectives and concerns of this study.

Secondary Data Sources

Methodology presented for the collection of secondary data sources was not followed as described. Deviation from the methodology was due to several problems, including those problems encountered while attempting to contact individuals and organizations regarding sources of existing consumer data sources. As indicated in the proposed methodology, phone interviews would be attempted to aid in discovering existing data sources. However these phone interviews were difficult to plan and coordinate. As an alternative form of communication, emails were used to conduct informal interviews.

Email addresses were collected primarily from entries in the University of Minnesota Ag Econ Search database. Authors were selected based upon whether the author had written an article relating to consumer food safety within the past ten years. Preference was given to those authors whose articles were selected as information sources for this project. Approximately 17 emails were sent to individuals representing various
university programs and the USDA. Of the 17 emails sent, ten responses were received containing information and suggestions for sources of existing consumer data.

Although communication by email was effective in most cases, individuals contacted were only able to identify particular sources. Therefore, in addition to using email interviews to discover existing data sources, extensive Internet searches were conducted. These Internet searches included various websites, search engines, and databases. Databases included in public and private databases, many of which are available through the Cal Poly Kennedy Library. This alternative methodology resulted in a better collection of data sources as compared to the initial methodology presented.

Criteria for Data Sources

While searching for data sources, only those fitting desired data attributes were discovered through the USDA website and market research firms. These data sources were uncovered following extensive Internet searches and guidance collected from various experts. Of the three sources gathered, one source is from the USDA Economic Research Service and two are available for purchase from market research firms.

Unfortunately access to databases through industry organizations and educational institutions were not discovered as hoped. One of the major problems encountered while searching for data is that US consumers have not yet addressed many of the issues being considered by this project. These issues have shown to be of greater interest by European consumers.

Love, 34
In addition, the proposed methodology stated that non-profit organizations would be targeted as possible sources of existing consumer data relating to food safety and consumer confidence in livestock protein sources. The main barrier to using these organizations as sources of consumer data sources was communication. While websites for respective organizations contained contact information, emails and website information requests did not result in any information that contributed to research results. Therefore, a greater emphasis was placed upon existing data sources available through the USDA Economic Research Service Briefing Rooms.

An ideal data set will include responses to questions from consumers regarding their willingness to purchase meat products based upon actual and perceived risks regarding genetically modified products, livestock diseases, foodborne illnesses, presence of allergens, and attitudes towards the roles of industry, science and government in ensuring the safety of the US food supply. These issues may be related to consumer confidence in meat products based upon various sources of animal protein during various livestock production. In addition, the data source would include responses regarding types and amounts of meat products purchased by respondents on a regular basis.

To determine the benefits and costs for each secondary data source, certain factors will be identified and evaluated. These factors include, but may not be limited to:

- Type of analysis provided (if available),
- Costs to obtain data,
- Accessibility of data discovered, and
- Requirements for access to data
Data Sources from Government

Many government institutions conduct research and collect data pertaining to many aspects of the American economy, including the factors that have the potential to affect consumer demand and industry supply of products and services. Government institutions such as the United States Department of Agriculture may seek to research the effects that consumer confidence and behaviors have upon the Agriculture Industry. The USDA has an obligation to both consumers and the industry to promote and ensure a safe food supply and provide consumer and industrial education regarding food safety topics and factors which attribute to concerns regarding food safety in products prepared and/or purchased in the foodservice sector or in the home.

ERS Supermarket Scanner Data

According to the April 2003 issue of Amber Waves, a publication from the USDA Economic Research Service, supermarket scanner data has been collected, including monthly average retail price data for selected cuts of beef, pork, chicken, turkey, lamb, and veal. In addition to prices of various cuts of meat, the database includes information on the volume sold and the volume of "featured" products sold under retailers' weekly-advertised specials and frequent shopper discounts. These data are collected at the point of sale by supermarkets using electronic scanners in checkout lines. The data set reflects information from stores representing 20 percent of supermarket sales in the United States. This data can be accessed through the “Data Feature” of the article, “Retail Meat Scanner Data.”
This data set collects information from supermarkets with over $2 million or more in sales and voluntarily provides their information. Scanner data continuously captures purchase prices throughout the month and includes data for a large variety of meat cuts, allowing for showing lower prices and being better at capturing volume-weighted featuring and price variability.

There are several advantages to this data set, including easy accessibility to the data set through the Internet. In addition, the database allows users to create custom tables in three different formats based on selected time periods and cuts of meat. However, the main disadvantage of this set of data is that it does not have an apparent method to track meat products based on characteristics such as protein sources.

General difficulties in collecting scanner data are referenced in the article accompanying this set of data. Aggregation is complex because meat is sold in randomly sized packages and, unlike most other packaged foods, does not have uniform product codes (UPC) for each cut. In addition, stores can provide a name and code for a meat cut that is unique to that store, that geographic area, or that franchise. Because of the difficulties in assigning an average price to a given standardized cut, no one has used scanner data before for analysis of meat prices.

Overall, this data set may be helpful in tracing consumer purchase decisions based on price and supply. Otherwise, this database of scanner data does not completely satisfy the objectives of this study.
Data Sources for Purchase

The main resource used to discover consumer market research companies was a marketing virtual library called “Know This.” This website is administered by Dr. Paul Christ, Associate Professor of Marketing and Director of MBA programs at West Chester University of Pennsylvania. Within “Know This,” information regarding sources of market research reports and online databases accessible by the public. Several of the links on this page were investigated. Of those links, MarketResearch.Com was the only source that returned search results meeting the previously identified criteria and objectives.

MarketResearch.Com

MarketResearch.Com is an aggregator of global business intelligence representing a collection of published market research available on-demand through the company’s website. According to the company, research is continuously updated from over 350 research firms and consultancies worldwide. After speaking with a customer representative, the site was navigated by using the category “Food and Beverages,” limiting the search to products from the “Meat and Poultry” category and research conducted in the United States. Search results contained 26 reports, ranging in purchase costs from $22.95 to $3,000 each and ranging in dates published from April 1995 to May 2003.

Of the 26 research reports meeting search criteria, two are covered in this section, including reports entitled Red Meat Market US Report and Meat Safety Attitudes and Awareness. These reports include an abstract describing the report contents and a table of
contents showing the topics covered in the research report. Terrance Hunter, a representative of MarketResearch.Com, replied to an email inquiry regarding access to data sources used in compiling the two market research reports identified below. Mr. Hunter indicated that both publications describe the sources used to obtain the data for each study. In addition, the “Meat Safety Attitudes and Awareness” includes the questionnaire used to collect data.

Red Meat Market US Report

According to the report abstract, the Red Meat Market Report includes information regarding consumption and consumer attitudes are indicated as included items in the full report. As a description of the report findings, the abstract states: “Although there have been high-profile meat recalls, including the second-largest ever ground beef recall in 2002, Americans do not seem to significantly change meat consumption as a result.”

The report’s table of contents indicates that the report includes information titled Food Safety Concerns, Irradiation And The Consumer, Concerns About Fat And Cholesterol, and New Product Introduction. The advantages of this study is that it is readily available through the MarketResearch.Com website and seems to cover some of the issues and objectives addressed in this report. However, the disadvantage of this study is that there does not seem to be any information or data collected in regards to consumer confidence towards protein sources, this study’s main objective. Mintel International

56 Terrence Hunter, (Email, July 2003)
58 For more information, see Appendix A: Red Meat Market US Report Abstract and Table of Contents.
Group, Ltd conducted this study and the cost to purchase is $3,000. The report is available in both Internet and hard copy formats.

Meat Safety Attitudes and Awareness

The Meat Safety Attitudes and Awareness report abstract states that the report examines consumers' awareness, beliefs, and attitudes about the safety of the US meat supply, and how these attitudes and beliefs influence their behavior. Specifically, the report concentrates on the impact of news regarding contamination, Foot and Mouth Disease, and BSE. Regarding the results of the report, the abstract states, “There appears to be a great deal of consumer confusion about various animal diseases and their potential for harming humans, as well as confusion about the relative likelihood and impact of other sources of contamination.” In addition, the abstract indicates that the consumer attitudes and awareness includes beliefs and misconceptions regarding contamination and safety of food products as well as what consumer believe to be true and how this compares to what is actually true.

The report’s table of contents also indicates that the research includes information headings regarding: Consumer Confusion, Beliefs About Mad Cow Disease and Foot and Mouth, Changes in Eating Patterns, Reasons for Changes in Eating Patterns, and What People Are Eating. As with the previous report on red meat, the main advantage of this report is its immediate availability through the Internet. The report also seems to address many of the objectives for this report, including how consumer confidence and awareness relates to food safety issues. A major disadvantage is that the research was conducted in

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59 For more information, see Appendix B: Meat Safety Attitudes and Awareness Abstract and Table of Contents.
July 2001, and substantial change in consumer confidence and attitudes may have occurred in the past two years. This report and research was conducted by Next Research, Inc and costs $750 to purchase. The report is available only in an online format.

Market Research Proposal

After having completed the revised methodology and considering various sources of secondary consumer data, it became obvious that data sources were either not available or discovered. Due to this observation, it was determined that a market research proposal could be developed which would allow for accurately testing the stated hypothesis and directly fulfill this study’s objectives.

This market research proposal will identify a strategy for collecting primary consumer data identifying significant changes in consumer confidence and willingness to purchase meat and poultry products based upon sources of animal protein used by producers. The proposal will include an Executive Summary, Purpose and Scope, Objectives, Research Approach, and Time and Cost Estimates. This proposal is designed for use by a company in the animal health industry but may be slightly modified to pertain to agricultural businesses in related industries.

Executive Summary

Using the market research method of personal interviews with a survey, primary data is proposed for collection. Individuals who will conduct personal interviews using the
survey outlined will target consumers exiting grocery stores. The survey will be approximately six pages long, requiring 5-10 minutes for completion.

Approximately 3000 surveys will be collected from people in nine cities, each representing a region of the United States. The cities that have been selected as those which will be visited to collect survey samples were selected from a list of the top 40 metropolitan areas according to the MSN City Guides site and have populations between 260,000 and 671,000. The smallest city by population visited will be Raleigh, North Carolina and the largest is Columbus, Ohio.

The survey will include various questions seeking information regarding meat purchases, desirability of labeling, desirability of meat product characteristics, agreement with statements describing the roles of industry, science, and government in food safety, knowledge and exposure to information which may impact purchasing decisions, and demographic information.

The costs estimated for this marketing research project is $49,280 and accounts for the cost of materials, labor, preparation, and miscellaneous expenses which may be incurred throughout the data collection, entry, analysis, and preparation.

Purpose and Scope

The purpose of this research proposal is to provide a plan for collecting data from consumers regarding their confidence in animal food products that may contain specific protein sources and whether the presence of these sources affect their purchasing behavior. The protein sources identified for the purposes of this study focuses on those protein
sources utilized in feed rations and may include genetically modified or biotech corn and soybeans, fish meal, and livestock manure and byproducts.

Through the process of conducting market research on these topics, a base will be developed which can be used to address and answer consumer concerns. These concerns include various characteristics of meat products, issues that significantly affect consumer confidence, and willingness to purchase meat products based upon specific product characteristics.

The scope of this market research proposal is to identify consumer confidence in the meat products that they purchase, primarily in supermarkets, and how this confidence may be attributed to specific issues which pertain to various sources of protein used in livestock production through feed rations and supplements. In addition, the data collected may also help in discovering consumer perception of the roles that industry, science, and government have in maintaining the safety of the US food supply.

Objectives

The objectives of this research proposal are to provide a method for primary data collection that will resolve the hypothesis associated with this project:

Consumer confidence in food safety is significantly affected by confidence in meat products based upon concerns that relate to animal protein sources used in livestock feed rations.

In addition, the aim of this research proposal is to address the problem statement, also previously identified:

Love, 43
Are consumer purchasing decisions and attitudes significantly affected by confidence in food safety and protein sources used in producing meat and poultry products?

Research Approach

The research approach will be an attempt to include U.S. consumers who are traditionally purchasers of livestock meat products for their household and/or family. According to Redmond and Graham in their article, “A Comparison and Evaluation of Research Methods Used in Consumer Food Safety Studies,” the most commonly used method for collecting data in the United States are interviews, collectively known as surveys.60 According to Redmond and Graham, the interview and survey method can provide valuable information although data is largely reliant on self-reporting of practices and consumer knowledge. In addition, Redmond and Graham indicate that the interview-survey method is best suited for investigating consumer knowledge and attitudes.

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60 Redmond, 19
Table 1: Redmond and Graham, Methods of Data Collection Used in Consumer Food Safety Studies

<table>
<thead>
<tr>
<th>Method of data collection</th>
<th>Frequency of use n (% of total studies)</th>
<th>Frequency of use n (% of total studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self completion questionnaires</td>
<td>23 (27%)</td>
<td></td>
</tr>
<tr>
<td>Postal</td>
<td>9 (10%)</td>
<td></td>
</tr>
<tr>
<td>Self administered</td>
<td>12 (14%)</td>
<td></td>
</tr>
<tr>
<td>Online</td>
<td>2 (2%)</td>
<td></td>
</tr>
<tr>
<td>Interview</td>
<td>42 (48%)</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>18 (21%)</td>
<td></td>
</tr>
<tr>
<td>Face to face</td>
<td>24 (28%)</td>
<td></td>
</tr>
<tr>
<td>Focus groups</td>
<td>7 (8%)</td>
<td></td>
</tr>
<tr>
<td>Observational studies</td>
<td>15 (17%)</td>
<td></td>
</tr>
</tbody>
</table>

In comparison, self-completion surveys, as described by Redmond and Graham, do not allow control of external influences or provide allow for verifying what individuals complete the survey. These disadvantages to self-completion questionnaires may be detrimental to this particular market research project because it is important to measure significant changes in consumer confidence and willingness to purchase meat and poultry products. Another disadvantage to self-completion questionnaires such as mailed surveys is that respondents may answer all the survey questions. Therefore an individual who purchases meat and poultry products should complete the survey. Since a main objective of this study is to measure consumer attitudes, the interview-survey method is the best method for collecting data. Consequently, data will be collected from consumers through the use of the interview-survey method rather than self-completion questionnaires, such as self-completion mail surveys.

With regards to the sample size that will be collected, Redmond and Graham’s research indicates that of the 108 food safety studies collected and studied, the 24 studies

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61 Ibid, 19
62 Ibid, 22
63 Qingbin Lang and Junjie Sun, Consumer Demand and Preference for Organic Food (American Agricultural Economics Association Annual Meeting, 2003)
used the interview method had a mean sample size of 1,809.\textsuperscript{64} Therefore, the sample size estimated for this research proposal is between 2,000 and 3,000. This large sample size will allow for good statistical inference. This large target sample size also will allow for exclusion of survey responses that are not complete or fail to meet respondent criteria.

Table 2: Redmond and Graham, Survey Sizes of Consumer Food Safety Studies for Different Research Methods Used\textsuperscript{65}

<table>
<thead>
<tr>
<th>Method</th>
<th>Total no. of consumers assessed per study type ($n^2$)</th>
<th>Total numbers of studies reviewed ($n^2$)</th>
<th>Mean no. of consumers assessed per study type ($n^2 + n^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone interviews</td>
<td>13,298,839</td>
<td>19</td>
<td>699,939</td>
</tr>
<tr>
<td>Face-to-face interviews</td>
<td>43,413</td>
<td>24</td>
<td>1,809</td>
</tr>
<tr>
<td>On-line questionnaires</td>
<td>2,807</td>
<td>2</td>
<td>1,404</td>
</tr>
<tr>
<td>Postal questionnaires</td>
<td>4,559</td>
<td>9</td>
<td>507</td>
</tr>
<tr>
<td>Self-administered questionnaires</td>
<td>2,540</td>
<td>12</td>
<td>212</td>
</tr>
<tr>
<td>Observation studies</td>
<td>1,244</td>
<td>15</td>
<td>55</td>
</tr>
<tr>
<td>Focus groups*</td>
<td>472–590</td>
<td>27 (53 groups)</td>
<td>67–84 (-8 groups)</td>
</tr>
</tbody>
</table>

Of these interviews, Redmond and Graham report that 67\% were conducted in the respondent’s own home, while alternative locations included in the street or sampling points, such as at specified supermarkets.\textsuperscript{66} Since the targeted population is those people who make purchasing decisions, data will be collected from consumers exiting grocery stores in selected cities. Trained research personnel from local universities will administer the survey process through face-to-face interviews to collect data.

Five retail grocery stores will be selected in each city visited, similar to the collection methods used by Goodwin and Koudele to analyze consumer characteristics associated with the purchases of beef and pork variety meats.\textsuperscript{67} Locations will be selected

\textsuperscript{64} Ibid, 20
\textsuperscript{65} Ibid, 20
\textsuperscript{66} Ibid, 24
during preliminary visits. Of the stores visited, three of the five stores will be conventional retail outlets, while the remaining two stores will be warehouse-type stores. This selection of grocery stores is similar to the methods used by Goodwin and Koudele in an effort to provide a cross section of the population in terms of ethnic groups, urbanization, income levels, and occupations.\textsuperscript{68} Grocery stores will be evaluated based upon observation of traffic flow; appropriate locations for administer interviews and surveys; and determine best times during the day that each location should be visited. In addition, store owners and/or managers will be contacted to determine when interviewers have permission to visit each site for data collection.

Data will be collected from populations in nine U.S. cities, which were selected cities were selected from a list of the top 40 metropolitan areas according to the MSN CityGuides\textsuperscript{69} with populations between 250,000 and 650,000.\textsuperscript{70} (See Table 4.1) Cities were also chosen due to each city’s potential for representing the state’s population base.

![Figure 1: U.S. Geographical Regions](image)

\textsuperscript{68} Ibid, 90
\textsuperscript{69} MSN City Guides, Metropolitan Top 40 (Microsoft Corporation, 2003)
\textsuperscript{70} US Census Bureau, (Department of Commerce, 2000)
Table 3: Cities Selected by Region including City Populations

<table>
<thead>
<tr>
<th>Region</th>
<th>City and State</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific</td>
<td>Sacramento, California</td>
<td>406,899</td>
</tr>
<tr>
<td>Mountain</td>
<td>Denver, Colorado</td>
<td>499,775</td>
</tr>
<tr>
<td>West North Central</td>
<td>Kansas City, Missouri</td>
<td>437,764</td>
</tr>
<tr>
<td>West South Central</td>
<td>New Orleans, Louisiana</td>
<td>460,913</td>
</tr>
<tr>
<td>East North Central</td>
<td>Columbus, Ohio</td>
<td>671,427</td>
</tr>
<tr>
<td>East South Central</td>
<td>Nashville, Tennessee</td>
<td>506,385</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>Pittsburgh, Pennsylvania</td>
<td>336,882</td>
</tr>
<tr>
<td>New England</td>
<td>Boston, Massachusetts</td>
<td>555,249</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>Raleigh, North Carolina</td>
<td>261,205</td>
</tr>
</tbody>
</table>

Survey Overview

The survey will include various questions aimed at identifying those factors that consumers consider when purchasing meat and poultry products, including: price, quality, quantity available, labeling, and confidence in food safety. Responses to these questions will assist in gauging consumer confidence in meat products based upon actual and perceived risks that affect purchase decisions. In addition, specific questions will lead to the development of a consumer profile for those consumers whose willingness to purchase meat and poultry products is based upon confidence in food safety as related to issues associated with sources of protein used during livestock production.

The survey will consist of six sections; the focus of the survey will be consumer confidence, purchasing behavior, and attitudes towards meat and poultry products and food safety issues related to the various uses and sources of animal protein. The first section will focus on identifying meat purchasers versus consumers who do not purchase meat products for their respective household. In addition, questions regarding recent meat and poultry purchases will aid in determining those products that are most often purchased for use in the home. The second section of the survey will focus on the significance of
product labeling and the impact that this has upon purchasing decisions. Responses from these questions will help determine the effectiveness of product labeling with regards to product characteristics that are related to protein sources.

In the survey’s third section, respondents will be asked to rate a list of product characteristics that may be important to meat purchasers and significantly affect purchasing decisions. Data gathered from these questions will provide for rating characteristics on a scale of importance to the consumers who purchase meat and poultry products. The forth section will include statements that respondents will be asked to rate on a scale of agreement to each statement. These statements will help assess consumer perceptions of the various roles of industry, science, and government with regards to food safety. Questions in the fifth section will pertain to consumer knowledge of key topics and sources of information such as the Internet and media, which will tests consumer knowledge of food safety issues and collect data regarding information sources that may affect purchase decisions. Finally, the sixth section will serve for collecting demographic data from each respondent.

It is important to note that consumer knowledge of food animal protein sources may not be defined by technical terms. Since consumer knowledge of protein sources may not be based on technical terms or information, respondents will be asked questions which directly relate to issues that may be associated with uses and sources of food animal protein sources. These issues include, but are not limited to genetically modified plants and the use of animal blood, bone meal or tissue as animal protein sources in livestock produced for meat and poultry products.
Survey Contents

To accomplish the objectives of this market research study, respondents will first be asked general questions regarding recent meat and poultry purchases, including those products that have been purchased and the amounts purchased. This approach to asking general questions regarding purchasing habits and is similar to the approach used by Wang and Sun in a Vermont study to measure consumer preference and demand for organic milk and apples.\textsuperscript{71}

These general questions regarding meat and poultry purchases will aid in preliminary filters that will help to define respondents based upon meat purchases for their household. Justification for these types of questions is based on collecting data that will help determine which survey respondents are purchasers of meat and poultry products. This type of data is collected to ensure that respondents are purchasers of those products that are the focus of this market research. In addition, data from respondents who do not indicate that they have purchased meat or poultry products within one month will not be included in the final data analysis.

Responses to subsequent questions in the first section of the survey will aid in indicating the frequency that certain meat products are purchased. The responses from these questions will provide data indicating which products are most frequently purchased on a regular basis, including the mean and median amounts of meat products purchased by the respondent for their household. This information will be used to determine if consumers make purchase substitutions between types of meat products based upon

\textsuperscript{71} Wang and Sun, 4
confidence in food safety and the perceived risks involved in consuming certain meat and poultry products.

In the second section of the survey, the survey will include questions regarding how likely consumers are to read nutritional and labeling information. This line of questioning is similar to that used by Rimal and Fletcher during a study measuring consumer attitudes toward meat labels and meat consumption.\textsuperscript{72} Respondents in this study will be asked to rate the importance of nutrition and product labeling similar to respondent responding to the survey conducted by Rimal and Fletcher.\textsuperscript{73}

Respondents will also be asked about the importance of labeling when purchasing meat products and asked to rate the desirability of labels that may be found on meat products. Information collected in this section of the survey may be used to measure the importance of nutrition and product labeling to consumers. This data may be analyzed to determine significant changes in consumer confidence as affected by the knowledge of actual and perceived risks regarding food safety between those individuals who do and do not read nutritional and/or labeling information. These label designations may include USDA grade, bulk packaging, range or grass fed products, and serving or cooking suggestions. Justification for questions in the second section is based upon observation of food safety-related market research collected for the Literature Review.

In the third section of the survey, respondents will be asked to rate various product features that may be considered desirable when purchasing meat and poultry products. This method is similar to that was used by Rimal and Fletcher who, with the assistance of the Gallup Organization, conducted a phone survey of households regarding peanut

\textsuperscript{72} Arbindra P. Rimal and Stanley M. Fletcher, Attitude Toward Meat Labels and Meat Consumption (Southern Agricultural Economics Association Annual Meeting, 2003)
\textsuperscript{73} Ibid, 8 and 11
consumption.\textsuperscript{74} The survey conducted by the Gallup Organization measured attitudes toward in-shell peanuts using a five-point scale ranging from “dislikes in-shell peanuts very much” to “like in-shell peanuts very much.”\textsuperscript{75} Similar to the Gallup Poll, this survey will ask respondents to rate product features on a scale of desirability from “Not at all Desirable” to “Very Desirable.” The list of features may include: GMO free, low in fat, lean meat, and hormone-free. These features may be related to uses and sources of animal protein. The responses to these questions will mainly aid in developing a profile of those consumers that experience significant changes in confidence regarding the safety of meat and poultry purchased for the household. In addition, responses will be statistically compared to determine significance between individual features and also aid in determining which factors are highly, moderately, and least desirable to purchasers of meat and poultry products.

The fourth section of the survey will include various statements regarding the role of industry, science, and government in US food safety. This technique is similar to that used by Duffy and Molnar in their study to measure attitudes towards government involvement in agriculture.\textsuperscript{76} Duffy and Molnar used five response categories: “strongly agree,” “agree,” “disagree,” “strongly disagree,” “undecided,” with regards to various beliefs about the role of government in the agriculture sector.\textsuperscript{77} For the purposes of this study, respondents will be asked to rate various statements within five response categories matching those used by Duffy and Molnar. Statements that may be included are:

\textsuperscript{74} Arbindra P. Rimal and Stanley M. Fletcher, Attitude Toward and Purchase Pattern of In-Shell Peanuts (Journal of Food Distribution Research, November 2000)
\textsuperscript{75} Ibid, 31
\textsuperscript{76} Patricia A. Duffy and Joseph J. Molnar, Attitudes Toward Government Involvement in Agriculture (Southern Journal of Agricultural Economics, July 1989)
\textsuperscript{77} Ibid, 122-123
I am confident in the safety of meat products I purchase.

The livestock industry produces products that I rely upon for safety, nutrition, and quality.

I believe science plays an important role in improving quality and ensuring safety of meat products.

I am willing to purchase products that contain genetically modified inputs.

I am concerned about the protein sources that the meat and poultry I purchase may have been produced with.

By asking respondents to rate their agreement with these statements, the perceived risks of respondents regarding food safety issues and the roles of industry, science and government can be measured. The level of agreement with these statements will also provide information regarding the perception of respondents regarding the roles of the livestock and animal health industries in ensuring the safety of meat and poultry products purchased for use in the home. Further justification for these questions is gathered from previous studies conducted to measure consumer confidence as a method to associate confidence in food safety with purchase decisions and perceived risks.

The fifth section of the survey will include questions used to determine consumer awareness and understanding of certain specific concepts, such as genetically modified products, mad cow disease, and food borne illnesses. In addition, respondents will also be asked regarding their use of the Internet, newspapers and television news sources for information regarding food safety issues which may affect consumer confidence in food safety and significantly affect willingness to purchase meat and poultry products. These questions will help determine the significant effects that self-knowledge and media has upon consumer purchasing decisions.
The sixth and last section of the survey will include questions aimed at collecting demographic data that will be used to evaluate responses to questions and statements throughout the survey. This data collection will be useful in obtaining data that will aid in determining purchasing behaviors. Demographics of the purchasing household is considered a factor in consumer purchasing behavior, as indicated in the definition of terms and as defined by Jekanowski, Williams and Schiek. In addition, this demographic data will aid in completing a consumer profile of those consumers whose confidence in food safety is affected by perceived risks, attitudes towards factors relating to food safety, and beliefs based on information collected from various media sources.

Time and Cost Estimates

Time and cost estimates will depend upon the receptiveness of potential survey respondents who have the opportunity to complete the market research. Since respondents will be approached as they are exiting retail grocery stores, there will be no costs associated with mailing surveys to respondents. Initially, incentives for completing the survey will not be used, although may become necessary if the response level is low. These incentives may be used to attract consumers and encourage them to collect surveys, although the use of incentives may add bias to the methods used to collect data.

Time can also have a potential affect upon the market research due to the potential impact of food borne illness or livestock disease that may impact perceptions of food safety. In addition, the time that may be required to obtain a respectable response rate will

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78 Jekanowski and et al, 46
be determined upon the number of trained research personnel used to collect data, weather (since personnel will be stationed at exits from retail grocery outlets), and the length of the survey.

**Time and Cost Estimates for Data Collection**

The estimated costs for data collection are $30,980 and includes costs associated with collecting secondary research, printing surveys, purchasing supplies, travel, and labor.

Prior to survey development and collection, secondary research will be collected to gather information that will guide the survey development and implementation. Due to the costs associated with time in collecting, copying, and printing sources is estimated to cost $10,000. In addition, the cost of printing the survey is estimated to be $6,000. This figure is based upon the assumption that 3,000 surveys will be printed. Various supplies will also be required to aid in the collection of survey responses, including pencils and clipboards; these costs are estimated to be $500.

Prior to data collection by trained research personnel to each of the nine cities selected, a preliminary visit will be made to each city from the centralized location of Indianapolis, Indiana. This trip will be made by one individual to each city with the intent to meet with city officials and learn what city regulations may affect collection of survey data in residential areas of the selected city. In addition, arrangements will be made with local universities to recruit trained research personnel to administer interviews and surveys. As teams begin to collect data, the supervisory market researcher will be expected to travel to each selected city to manage the data collection process. Time for the data collection
process will vary from between locations. Since personnel used in data collection will be recruited locally, multiple visits may be arranged to complete data collection.

As in a Kansas survey that measured consumer characteristics associated with beef and pork variety meats by Goodwin and Koudele, interviews should be conducted during a busy four-hour period at each store, such as the afternoon hours of 2-6pm on the busiest shopping days of Thursday, Friday and Saturday.\textsuperscript{79} Although the survey conducted by Goodwin and Koudele was administered over a seven-month period, the total time to complete data collection in this market study will be approximately three months for all locations. Total travel costs are estimated to be $8,000.

Finally, the labor associated with the collection of surveys will be paid at the rate of $15.00 per hour to each personnel involved in the data collection process. One team will consist of three individuals and data collection will be done over a period not to exceed one month in each location, unless a representative sample has not been collected. Costs for collecting data are estimated to be $6,480.

\textsuperscript{79} Goodwin and Koudele, 90
Table 4: Estimated Costs for Data Collection

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Research</td>
<td>$10,000</td>
</tr>
<tr>
<td>Paper (3000 surveys, 12 pages per survey, $2.00 per survey)</td>
<td>$6,000</td>
</tr>
<tr>
<td>Supplies</td>
<td>$500</td>
</tr>
<tr>
<td>Labor (9 teams, 3 people, 16 hours, $15.00)</td>
<td>$6,480</td>
</tr>
<tr>
<td>Travel (20 trips, $400/flight)</td>
<td>$8,000</td>
</tr>
<tr>
<td><strong>Estimated Sub-Total</strong></td>
<td><strong>$30,980</strong></td>
</tr>
</tbody>
</table>

Time and Cost Estimates for Data Entry

In addition to costs incurred regarding data collection, costs associated with data input will also be accumulated. Labor will be needed to create the data input template, data entry, and verify data input values. These costs are estimated to total $4,500.

Labor for creating the data template should take approximately two days and cost $250 each day, a total of $500. The individual responsible for this task will set the standard by which data is entered into a software data analysis program, provide for eventual evaluation and analysis of collected data. Data entry labor is based upon the assumption that 3000 surveys will be collected and that data from twelve surveys will be entered each hour. In addition, labor required for data verification will ensure that the data entered is correct, void of missing or incorrect data values. These processes should take approximately two weeks and is estimated to cost $4,000.

Table 5: Estimated Costs for Data Entry

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor: Data Template (2 days, $250/day)</td>
<td>$500</td>
</tr>
<tr>
<td>Labor: Data Entry (3000 surveys, 12 surveys/hour, $10.00/hour)</td>
<td>$2,500</td>
</tr>
<tr>
<td>Labor: Data Verification (3000 surveys, 20 surveys/hour, $10.00/hour)</td>
<td>$1,500</td>
</tr>
<tr>
<td><strong>Estimated Sub-Total</strong></td>
<td><strong>$4,500</strong></td>
</tr>
</tbody>
</table>
Time and Cost Estimates for Data Analysis and Interpretation

Costs estimated for data analysis and interpretation are $12,800. This cost is determined by assuming that data analysis and interpretation will take approximately four weeks, hourly costs estimated at the amount of $80 per hour. Tasks that will be performed include data analysis, interpretation, and the preparation of statistical tests.

Table 6: Estimated Costs for Data Analysis and Interpretation

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor: Data Analysis, Interpretation, Preparation of Statistical Tests (4 weeks, 40 hours/week, $80/hour)</td>
<td>$12,800</td>
</tr>
<tr>
<td><strong>Estimated Sub-Total</strong></td>
<td><strong>$12,800</strong></td>
</tr>
</tbody>
</table>

Total Costs and Time Requirements

In addition to the costs outlined above, there is the need to prepare for unexpected expenses that may occur in the process of data collection, input, analysis, and interpretation. To account for these miscellaneous expenses, $1,000 will be added to the budget for this market research proposal.

Table 7: Total Estimated Costs and Expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Research</td>
<td>$10,000</td>
</tr>
<tr>
<td>Materials and Supplies</td>
<td>$6,500</td>
</tr>
<tr>
<td>Labor</td>
<td>$23,780</td>
</tr>
<tr>
<td>Travel</td>
<td>$8,000</td>
</tr>
<tr>
<td>Miscellaneous Expenses</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>Total Overall Estimate</strong></td>
<td><strong>$49,280</strong></td>
</tr>
</tbody>
</table>
The total of costs and expenses for this market research proposal is $49,280. This includes the sub-totals for each area in which costs were incurred as well as the amount budgeted for unforeseen miscellaneous expenses that may be encountered while conducting the market research. In addition, the time requirement for this market research is estimated to be 14 weeks for data collection, input, analysis, and interpretation.
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

In order to address the objectives of this project, an extensive literary review of food safety issues, policy issues, animal protein sources, consumer confidence studies, and market research methods. This secondary research has resulted in the discovery of three data sources, which study consumer confidence and willingness to purchase meat and poultry products. Secondary research also aided in developing a market research proposal, using information from:

- Market research textbooks,
- Previous consumer confidence studies,
- Websites administered by educational institutions and market research professionals,
- Periodical articles from professional and peer reviewed journals, and
- Bulletins/newsletters published by a variety of governmental agencies and industry organizations.

The existing data sources were evaluated based on positive and negative aspects of each source, including ease of access and cost to obtain data sources. The market research proposal is also evaluated based upon cost and time estimates.

In response to the hypothesis and problem statements established at the beginning of the research project, neither has been tested to be accurate or incorrect.
Conclusions

The primary hypothesis developed for this research project was: Consumer confidence in food safety is affected by their confidence in meat products based upon concerns that relate to animal protein sources used in livestock feed rations. This hypothesis has not been addressed for several reasons. One of the main reasons that this hypothesis has not been tested is because existing data regarding consumer confidence in animal protein sources has not been discovered.

A great deal of research has been conducted regarding consumer confidence in food safety, especially in regards to precautions taken in the home to prevent food borne illness, consumption of undercooked hamburger, purchase decisions significantly affected by perceptions of risk associated with the consumption of meat and poultry products, and willingness of consumers to purchase genetically modified food.

A limitation formulated at the beginning of the research process was to limit research to those data sets that represent responses from United States consumers rather than European consumers. This is due to the differences in knowledge and attitudes between European and American consumers. However, the issues that were being considered in this research project are issues that are of greater importance to European

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80 Lindsay Wittenburg, Facing Up to Panic: In the Face of Consumer Panic The Third UK Food Law Co (Food Manufacture 63 August 1999)
81 Redmond
82 Stephen R. Crutchfield, Economic Issues Associated with Food Safety (Increased Understanding of Public Problems and Policies, 1995)
84 Woodburn
85 Hossain
86 Gregory A. Baker and Michael A. Mazzocco, Consumer Response to GMO Foods: Branding Versus Government Certification (Western Coordinating Committee on Agribusiness, June 2002)
87 Ruth M.W. Yeung and Joe Morris, Food Safety Risk: Consumer Perception and Purchase Behavior (British Food Journal 103-3 2001)
consumers and therefore a greater threat to efforts to market and sell meat and poultry products in European markets.

Due to the lack of secondary data sources discovered, a market research proposal was developed in order to provide a method for collecting consumer confidence data as affected by issues related to the uses of protein sources by livestock producers. By conducting the research proposed, a more accurate representation can be developed concerning the affect that consumer attitudes and beliefs regarding issues such as genetically modified products and livestock diseases has upon consumer willingness to purchase meat and poultry products.

By conducting market research specific to the objectives and interests of Elanco, a more accurate data set can be obtained as compared with that data used in recommended data sources. However, if this market research proposal is implemented, significant time and money commitments are required to complete data collection and analysis. The main benefit of a customized market research is that questions can be designed to ensure consumer data collection specifically relating to significant changes in consumer attitudes, confidence, and beliefs regarding:

- Risks associated with consuming meat and poultry products and
- The uses and sources of livestock protein sources

A second benefit of a custom designed market research proposal is that such a project would allow for the ability to identify a more accurate representation of the consumers whose purchase decisions are affected by animal protein sources. Data collected may also reveal what actions can be taken to minimize the affect that issues have on purchase decisions.
Recommendations

Due to the lack of data sources available regarding the objectives of this research project, one of the primary recommendations is to purchase data sources that may help to determine issues regarding an overall view of food safety that may also apply to specific consumer confidence and attitudes towards livestock protein supplements. Data sources that are recommended for purchase include the market research conducted by Mintel International Group, Ltd and entitled “Red Meat Markets in the US.” This data source is available in both paper and Internet formats, is immediately accessible after purchase through MarketResearch.Com and costs $3,000. This research provides information regarding consumer food safety concerns and new product introductions.  

The second market research study that is recommended for purchase was conducted by Next Research, Inc and is entitled “Meat Safety Attitudes and Awareness.” This study is also immediately accessible after purchase through MarketResearch.Com, although this study is only available in an electronic format through the Internet. This study costs $750 to purchase and includes information regarding the impacts of news, livestock diseases, foodborne diseases, consumer attitudes and beliefs.

Both of these market research studies apply to a few of the issues identified as significant to consumer purchase decisions that are of interest to Elanco. However, neither study recommended for purchase addresses the affects of consumer confidence in meat and poultry products based upon sources of livestock protein used during livestock production.

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88 Op. Cit., Mintel International
89 Meat Safety Attitudes and Awareness (Nest Research Inc, July 2001)
In order to obtain data from American consumers regarding this shortfall, specific research should be conducted, which is the second recommendation of this study.

In addition to purchasing existing market research data, it is recommended that Elanco conduct market research regarding consumer confidence in food safety and the purchase of meat and poultry products based upon livestock protein sources. However, this research should be conducted if interests in consumer confidence may be seen as an impact to Elanco business as animal health company. The data that may be collected through the market research proposal identified will provide information that will prepare Elanco and the industry for possible changes in consumer confidence which may eventually affect businesses in the animal health industry as consumer confidence in food safety of meat and poultry products begins to extend beyond livestock producers.
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Love, 68


Abstract

Red meat has experienced moderate growth from 1997 to 2002, increasing about 5% in real terms over the period. Beef, the most popular red meat, has remained steady in consumption, while pork has grown in sales and its consumption could soon rival beef's. Lamb, which has faded from consumers' minds as a meat choice, is in decline. Although there have been high-profile meat recalls, including the second largest ever ground beef recall in 2002, Americans do not seem to significantly change meat consumption as a result. The red meat industry is highly concentrated among a few large companies, and legislation and lawsuits have been challenging this concentration of power. At the same time, producers and retailers are attempting to de-commodify their products by building brands. Quality and food safety concerns may accelerate this trend. Americans' interest in broadening their diets, after turning away from an intense focus on sharply limiting fat in the late 1990s, could help continue the increase in per capita consumption of pork, and could change beef consumption with a slight increase from stable. Without some effort on the part of producers, it is unlikely that lamb will move away from the course it is on, to becoming a meat associated only with certain holidays.
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APPENDIX B:

MEAT SAFETY ATTITUDES AND AWARENESS

Abstract

This study examines consumers' awareness, beliefs, and attitudes about the safety of the US meat supply, and how these attitudes and beliefs influence their behavior. Specifically, it concentrates on the impact of recent news stories surrounding contamination of foreign and domestic beef and pork from a variety of sources, with special emphasis on Foot and Mouth and Mad Cow Disease (Bovine Spongiform Encephalopathy, or BSE). Areas of investigation include beliefs and misperceptions about these diseases, consumer response to concerns about possible contamination in beef and pork, and beliefs about the relative safety of various sources of beef and pork products. There appears to be a great deal of consumer confusion about various animal diseases and their potential for harming humans, as well as confusion about the relative likelihood and impact of other sources of contamination. This report examines what consumers believe to be true, along with the actions they are taking as a result of these beliefs, and also contrasts these beliefs with what is actually true.
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