

**AN INVESTIGATION OF COMMUNICATIONS PROCESS WITHIN THE
TEXAS BEEF INDUSTRY**

An Undergraduate Research Scholars Thesis

by

KATIE HEINRICH & VICTORIA PILGER

Submitted to Honors and Undergraduate Research
Texas A&M University
In partial fulfillment of the requirements for the designation as an

UNDERGRADUATE RESEARCH SCHOLAR

Approved by
Research Advisor:

Dr. Billy McKim

May 2014

Major: Animal Science; Agricultural Communications and Journalism
Animal Science; Agricultural Communications and Journalism

TABLE OF CONTENTS

	Page
ABSTRACT.....	1
DEDICATION.....	2
ACKNOWLEDGEMENTS.....	3
NOMENCLATURE.....	4
CHAPTER	
I INTRODUCTION.....	5
Economic supply chain model.....	5
Social cognitive theory.....	8
II LITERATURE REVIEW.....	11
Process of communication.....	12
Limits of communication/communication barriers.....	13
The need for new models.....	18
III METHODS.....	21
Design.....	21
Context of study.....	25
Research bias.....	28
IV RESULTS.....	30
Environmental determinants.....	30
Personal determinants.....	30
Character personas.....	31
Data analysis.....	47
V DISCUSSION.....	56
Initial premise.....	56
Theory and limitations.....	57
Implications.....	58
REFERENCES.....	61

ABSTRACT

An Investigation of the Communications Process within the Texas Beef Cattle Industry. (May 2014)

Katie Heinrich
Department of Animal Science
Department of Agricultural Leadership, Education, and Communications
Texas A&M University

Victoria Pilger
Department of Animal Science
Department of Agricultural Leadership, Education, and Communications
Texas A&M University

Research Advisor: Dr. Billy McKim
Department of Agricultural Leadership, Education, and Communications

The purpose of this qualitative study was to identify and describe the communication process between and among sectors, and their corresponding members, in the Texas beef cattle industry. An inductive, qualitative approach was used to develop a platform for the study. Semi-structured interviews were conducted with individuals involved in the production, processing, and/or sale of beef cattle in Texas to investigate means/modes of communication and information sharing between these individuals. A grounded theory and case study approach was used to guide data collection, analysis, and modeling of the results. Interpretation of data collected from individuals indicated by the components in the Texas economic beef supply chain model were guided by Bandura's (1986) social cognitive theory.

DEDICATION

We would like to dedicate this project to many individuals:

- Our families for their continuous support and patience;
- Our friends for encouraging us throughout the struggles and triumphs of this project;
- Our fellow undergraduate researchers for the guidance, high standards, and feedback that you have provided to make our project better;
- Our advisor, Dr. Billy McKim for his insight, encouragement and willingness to answer our many questions. We were introduced to a new way of thinking and pushed to use our academia in ways we never have.

This project would have not been completed without each of you, and we sincerely appreciate your contribution and support.

ACKNOWLEDGEMENTS

We would like to acknowledge the Texas beef industry for allowing us to explore our passion for agriculture and communications. There is more to learn, but we are thankful for the opportunity to begin our research and work to contribute to an industry that continues to be an important part of our lives.

Additionally, our classes at Texas A&M University have equipped us to be successful in our future endeavors and we are appreciative of the students, faculty, and staff that have contributed to our academic careers.

NOMENCLATURE

JBS Global animal protein processor

USDA United States Department of Agriculture

CHAPTER I

INTRODUCTION

In a recent presentation at Texas A&M University, a JBS marketing employee stated, “We used to rely on the government to tell us what [product] was good and what was bad. Now we are relying more on the consumer to tell us that. Consumer transparency is something we are putting a bigger emphasis on in our company” (Flynn, 2013, p. n.a.). Flynn (2013) referred to consumer transparency as the motives of the producer that directly affect the consumer and the availability of information for the consumer.

To increase consumer transparency, individuals involved in the industry must be aware of each sector of the industry as seen in the economic supply chain model.

Economic supply chain model

When describing supply chain models, economists have noted a linear sequence of goods being transferred from one end of the model to the adjacent sector. Economists have also noted external influences on the model. Most notably, external influences have included the transfer of money and/or market signals that directly influence supply and demand.

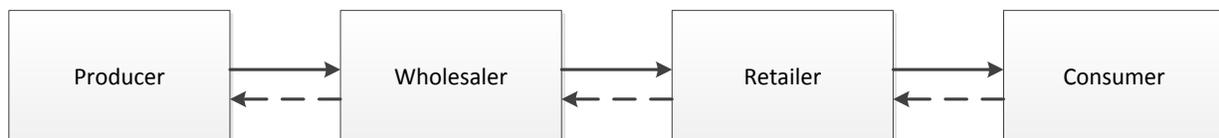


Figure 1. A generic supply chain model described by Smith (2012).

Although transfer of money/market signals and their movement in a supply chain have been extensively noted in the literature, few obvious studies were noted regarding communication between entities in a supply chain. Communication is often overlooked when goods and services are transferred between adjacent elements or sectors. When compared to money transfer and market signals, communication may not necessarily move similarly. Therefore, communication may have significant effects on supply chain model.

As consumer transparency continues to be highly emphasized in the agriculture industry, businesses are being forced to change their current communication methods. Consumers are demanding more information from not only the retailer, but stemming back to the producer for food-based agricultural products. A communication model, proposed by Herring (A. Herring, personal communication, November 4, 2013), noted communication is analogous to the supply chain model within the beef industry. Herring's (2013) model showed that communication elements and sectors may affect each other openly, rather than linearly.

This descriptive, sequential study's initial guidance was provided by the first overarching research question: How is communication occurring between and among the sectors of the economic supply chain model in the beef industry? Herring's (2013) model provided initial guidance to investigate the communication flow between sectors of the beef industry. Interviews were conducted with individuals associated with and/or representing each component of Herring's (2013) model to further investigate and describe the components, communication between and/or among components, and the arrangement of components in the model.

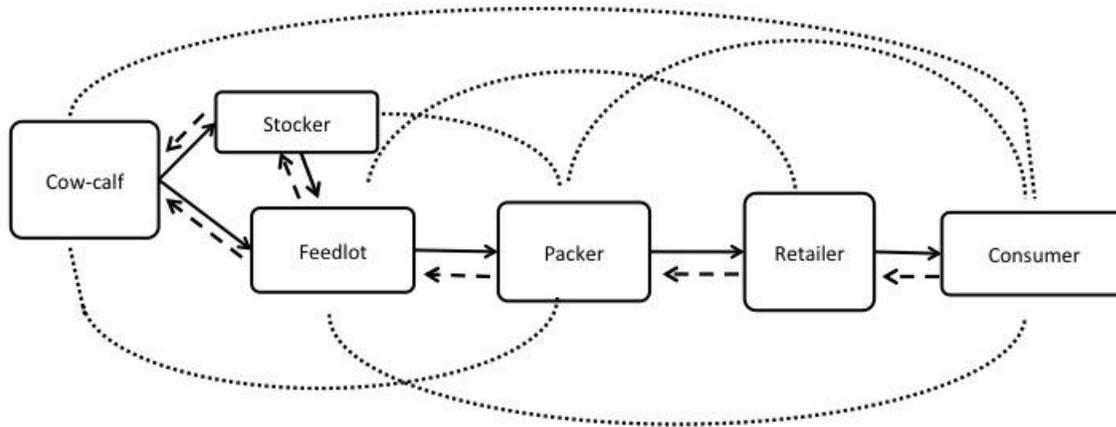


Figure 2. Potential for open information along the supply chain of beef production for U.S. industry. Animal and product flow represented by solid arrows; money and market signals represented by broken arrows; possible information exchange between sectors is represented by dotted lines.

The second and subsequent research question that provided guidance for this study was, what terms and definitions are commonly associated with food-based agriculture products within the beef industry? This study described communications between elements in the model and the content of communications. Subsequently, this study identified and described a potential communication gaps and/or barriers between components of Herring’s (2013) model. Disconnects may be due to different terminology or definitions associated with food-based agricultural products.

An example of how a potential communication gap may occur is a homonym. In the English language, homonyms are words with the same pronunciation as another but with a different meaning and usually spelling. *Their, there, and they’re* are three words that are often misunderstood when heard; however, when placed in a sentence, the differences are typically distinguishable, based on context and spelling (Webster, 2009).

A similar problem may occur in the agriculture industry. The interpretation of *lean* from a producer perspective may focus on the intramuscular, marbling characteristics of a beef carcass. The consumer's interpretation of the term *lean* may instead refer to the intermuscular, or seam, fat. In both instances, less fat is being communicated, but the meanings differ because of variations in the understanding and interpretation of the word. Therefore, consumers may ask for products that the producer may not generate accurately to the consumer's intended standards. The beef production flow has a very specific movement across the supply chain model, where as communication flow can be disrupted at a variety of points based on the intended audience. Bruhn (1995) stated that communication strategies involve identifying the audience, selecting the communication medium, presenting the benefits of the process, and addressing myths.

Social cognitive theory

Terms, definitions, and phrases, also referred to as semantics, can be directly derived from the behavioral determinants described in Bandura's (1986) social cognitive theory. This portion of Bandura's three-component theory was the focus of our study through semi-structured interviews. The additional portions of Bandura's theory include personal determinants and environmental determinants. In regard to behavioral determinants, semantics can be approached by the investigation of multiple forms of communication. Researchers often study how people communicate verbally, visually, and in written forms (Nabi & Oliver, 2009).

Environmental determinants

Beyond types of communication, researchers in each area of communication (verbal, visual, written) have noted regional and contextual limitations to communication research. In this study,

Bandura's (1986) environmental determinants are restricted to the component that each individual associates with in the supply chain model. The daily interactions an individual encounters will vary, based on the location of his or her office, the procedures and practices of his or her office, and time and financial commitment to his or her job.

Personal determinants

Personal determinants in each sector of the supply chain are more restricted due to the diverse backgrounds and requirements for each job. The reason these determinants are more restricted is because uncovering personal determinants through an interview is harder than determining environmental determinants. Consumer beliefs, included in personal determinants, vary at different parts of the food production system including biotechnology use, food irradiation, and/or animal welfare. Due to variations in personal and environmental determinants, we investigated differences in behavioral determinants, or semantics, among and between the components of the supply chain model within the beef industry.

By focusing our investigation on basic modes (verbal, electronic) of communication between (including but not limited to) consumer, producers, and retailers concerning food-based agriculture products, the outcomes of this study may provide guidance for a supportive foundation to meet communication goals. Thus, the primary goal of this study was to develop a model that describes the process of communication among and between the different sectors of the Texas beef industry. A subsequent goal of this study was to identify and describe differences in terms used by sectors of the supply chain of food-based agriculture products.

By gaining a better understanding of the semantics used for basic agricultural terms for the production of food, in producer, consumer and marketing settings, we may improve the understanding and communication throughout the beef industry. Duncan and Moriarty (1998) pointed out that planning tools are needed to identify message fractures and points of message confusion. Communication issues must be addressed with a viable strategy that the consumer, producer, and retailer understand. The consumer, producer, and retailer are three overarching and broad categories that encompass the multiple sections of the beef industry.

The scope of two larger and longer-term goals exceeds the scope of this study. To alleviate a potential gap in communication and allow for consumer transparency to be achieved, two longer-term goals include: 1) Develop a model for mass communication outlets such as the media, agriculture agencies and businesses, and retailers to use when dealing with large exposure of the Texas beef industry in the media. The sought outcome of this study hopes to create a fluent exchange between and among the consumer, producer and other entities to allow for successful product fulfillment. 2) Develop a list of common terms and definitions for food-based agriculture products, which may be used when developing advertisements and/or legislation, such as the Farm Bill.

CHAPTER II

LITERATURE REVIEW

As we investigate the product and communication models and channels in the beef supply chain in Texas, it is important to first understand communication. The process of communication can be described as the scientific study that tends to concentrate upon one or more of the questions: who—says what, in which channel, to whom, and with what effect (Lasswell, 2007)? We must also understand what influences communication and why the focus of our investigation should incorporate an open communication between and among sectors versus a sequential linear communication that only follows market signals and goods from the producer to the consumer. By understanding the process, influences, and need for open communication, these factors helped us to describe the possible communication gaps existing in the economic supply chain model.

As Manis, et al., (1974) stated, communication involves the transfer of information from one person to the next, and thereby enables the individual to learn about situations with which he has not had direct [personal] contact.

Information, the product of communication, is the tie that binds in any relationship (Duncan & Moriarty, 1998). This could include relationships made between a sector of the supply chain (e.g., feedlots) and those sectors on either side of it (i.e., supplier and packers). The product of communication follows the product of interest. Discussion of information flow, information

processing, and information sharing are found in both consumer behavior and communication literature (Duncan & Moriarty, 1998).

Process of communication

Communications pass through sequences in which various senders and receivers are linked with one another (Lasswell, 2007). Lasswell (2007) equivocates the communication processes of human society to that of a single highly differentiated organism, explaining that when examining in detail communication interactions within human society, there are many equivalences found in the lower animal societies.

“Within a single highly differentiated organism, incoming nervous impulses and outgoing impulses are transmitted along fibers that make synaptic junction with other fibers. The critical points in the process occur at relay stations where the arriving impulse may be too weak to reach the threshold, which stirs the next link into action. At the higher centers, separate currents modify one another, producing results that differ in many ways from the outcome when each is allowed to continue a separate path” (Lasswell, 2007, p. 217).

The impulse process occurring in a differentiated cell can also be attributed to most economic supply chain models by conceptualizing each sector as a critical point or relay station. Each critical point has as much information or “impulse” as the sector before it relays. That critical point or sector of the supply chain then has the ability to modify and produce a different impulse or message to the next critical point or relay station. Market signals (i.e., desires) from the

consumer end of the supply chain may arguably be too weak to reach the threshold of the producer located at the opposite end of the production system. This would indeed produce different results than if the message the consumer was sending was coherently and consistently reaching the producer strongly and in the intended manner.

Limits of communication/communication barriers

It is suggested that the analysis of communication implies that there are certain criteria for efficient or inefficient communication (Lasswell, 2007). One task of extensively noting external factors and influences on production movement through the supply chain has been to discover and control any factors that interfere with efficient communication.

External factors and influences on communication channels could be the reasoning behind a non-coherent and non-consistent transfer of information between sectors of the supply chain. These influences have been noted as incommunication (Bordenave, 1976; Duffy, 2005), not having a shared language (Duncan & Moriarty, 1998), differences in environmental and personal determinants (Bandura, 1986), unplanned communication factors (Duncan & Moriarty, 1998), and the general interest of consumers about certain products (Duffy, 2005).

Incommunication

A more general problem and inefficiency is the state of *incommunication*. Bordenave (1976) discovered incommunication was widely inefficient and was apparent both among the members of rural population as well as between the rural and the urban populations, as noted by centers for Latin America. Bordenave's (1976) findings lends an interesting approach to this inquiry that

there might be a communication gap in the beef supply chain, especially if there is little to no communication between sectors.

Bordenave (1976) concluded that there is not sufficient research on possible feedback mechanisms, which could facilitate the flow of messages from the farmers to the decision-makers, or in our case, from the producers to the consumers. Bordenave (1976) further stated that there was also not sufficient research on feasible exchange mechanisms that could increase the flow of communication among farmers themselves. The question arises: Could the gap exist due to different members of the same sector not communicating amongst themselves to disseminate the given information to the next sector as one same-minded unit?

Shared language

If the flow of communication and information is low, incommunciation, between members of the same sector, how can it be feasible for those same members to share the same language if they do not talk? Duncan and Moriarty (1998) described not sharing the same language as a communication barrier even in something as simple as among employees at department stores:

“...department’s (employees) must develop a shared language that reflects similarities in members’ interpretation, understanding, and response to information—organizational members unfamiliar with it [the code] may distort and misinterpret it and find communication with the departmental members difficult...” (Duncan & Moriarty, 1998, pg. 4.)

Duffy (2005) suggested the efforts for effective communication are likely to remain fragmented unless industry can agree on a unified message to promote to consumers. Duffy (2005) explained, suggesting different approaches to food production creates barriers for the industry as, for example, the messages of the organic movement may be completely different than that of traditional farming methods.

Bandura's environmental determinants

Limiting factors of communication can also be derived from environmental and personal determinants as described by Bandura's (1986) social cognitive theory. Beyond types of communication, researchers in each area of communication (verbal, visual, written) have noted regional and contextual limitations to communication research. Bandura's (1986) environmental determinants are restricted in this study based on the component that each individual associates with in the supply chain model. The daily interactions that an individual encounters will vary, based on the location of his or her office, the procedures and practices of his or her office, and time and financial commitment to his or her job.

In Bordenave's (1976) research of communication models helping innovation in Latin America, he found that functions performed by the various messages and media in a person's life were different according to the position of the individual (farmers, etc.) in Latin America's social structure. Thus, each owner and position in the social structure will use communication and information as a power tool. Bordenave (1976) explained, an individual might gain this power in the social structure when only the individual knows information about the current labor laws or market prices. That individual can decide to communicate or not communicate the information to

the next sector. For the worker, in another part of the sector, communication may play a different role, such as to provide escape, fantasy, entertainment, or orientation for migration.

Personal determinants

Personal determinants in each sector of the supply chain are more restricted because of the diverse backgrounds and requirements for each job. The reason personal determinants are more restricted is because uncovering personal determinants through an interview are harder than inferring environmental determinants. Consumer beliefs included in personal determinants vary at different parts of the food production system including biotechnology use, food irradiation, and/or animal welfare.

Besides skill factors, the level of [communication] efficiency is sometimes adversely influenced by personality structure, Lasswell (2007) suggested supporting Bandura's (1986) theory and use of personal determinants in the literature. An optimistic person may arrive at a very optimistic view of events versus a pessimistic person who may confirm their gloom in events around them. Bordenave (1976) explained that the influences of the social sciences showed in Latin American communication is not simply black and white, but as a multivariable, dynamic interplay of numerous factors, some of them quite intangible. Bordenave (1976) explained, noting it became evident through his study and through the literature, that the receiver of the messages determined the meaning of the messages, rather than the messages themselves. The messages could not just be written on a blank page, often labeled as the receiver, as the receiver became known as a living being whose beliefs, attitudes and values grew out of their own experiences (Bordenave, 1976). Individuals receiving the message could ultimately determine the meaning of the message

based on their past experiences that could manipulate or change the original intended meaning of the message. This assumption brought a reaction against the linear communication that went from left to right, from change agent to farmer in Latin America, that carries information like a bucket carries water (Bordenave, 1976).

Unplanned communication

Although Duncan and Moriarty (1998) pointed out that a company's hiring practices, its environmental policies and behavior, and its financial performance have communication dimensions that cue or signal important meanings, they also note that unplanned communication—word of mouth, media investigations, etc.—should be considered by companies. Companies and brand managers must better achieve the spectrum of communication, both planned and unplanned, and the service messages they deliver in order to understand that everything a company does and does not do can send a brand message with varying impact.

General interest

Access to media may be hampered because much of what individuals wish to communicate is often quite complex and not always very newsworthy. Another perceived barrier to communicating to the general public is that fact that many consumers are simply not interested in finding out more with the agriculture industry, such as farming (Duffy, 2005). Duffy explained, the commercial business that does engage with consumers and target groups often tailors its communication and information on individual products instead of a general idea or trend. By tailoring messages to individual products, individual companies tend to connect consumers with

brands rather than influence perceptions of and attitudes towards the food chain in general (Duffy, 2005), or specific sectors therein.

Duffy (2005) suggested that the reasoning behind targeting certain brands to consumers is due to lack of funding for perception change on a greater scale. Organizations in the British agri-food industry face the difficulty of not being able to afford the money it would take to get their messages or disseminate information on the scale that consumers say is needed for them to think about food production more: While the British agri-food industry has attempted to connect the current generation of food consumers to food and farming and the implications of their purchases on the British farmland industry, it has been failed due to the lack of funds to efficiently communicate and engage the message. There is a distinct lack of resources to effectively communicate the information that exists and evaluate its impact on the attitudes, perceptions, and behavior consumers in the food supply chain (Duffy, 2005).

The need for new models

By looking into the literature and research of why new communication models were needed in Bordenave's (1976) Latin America research, it is evident that even the linear, sequential communication currently found in the beef supply chain in Texas, "a more liberating communication would contain more dialogue" (Bordenave, 1976, p. 138). As Bordenave (1976) studied and analyzed the relationship between communication and the adoption of agricultural innovation in an underdeveloped Latin America, it was seen that the problem initially only involved three facets: the farmers, the innovations, and the communication sources and channels. But the analysis would later show that these three elements actually consisted of a whole array of

personalities, process, forces, and situations—all connected with many other complex structures and processes.

The influences of the social sciences showed in Latin America that communication is not simply black and white, but as a multivariable, dynamic interplay of numerous factors, some of them quite intangible, which would go against the linear model of communication that went from left to right through Latin America's social system (Bordenave, 1976).

Two-way communication

The literature showed that two-way interaction leads to interactivity, which establishes relationships that further implement open communication. Webster (2009) described interactivity as designed to respond to the actions, commands, etc., of a user, while also requiring people to talk with each other or do things together which means they are mutually or reciprocally active.

Duncan and Moriarty (1998) emphasized, two-way communication through better listening to customer's interactivity, and the idea that communication before, during, and after transactions can build or destroy important brand relationships. Lasswell (2007) noted the circuits of communication are predominantly one- or two-way depending upon the reciprocity between the audiences and the communicators. Two-way takes an equal frequency by two or more persons for it to occur. Two-way communication or open communication between sectors could allow for motivation and the ability to capture all pertinent interactions and not just transactions as discussed by Duncan and Moriarty (1998).

Relationship development

Relationship development helps the beginning of communication come full circle—information sharing:

“Communication is the human activity that links people together and creates relationships; it is the heart of mean-making activities not only in marketing, but also in a wide range of political, social, economical and psychological areas. It serves as a way to develop, organize and disseminate knowledge” (Duncan & Moriarty, 1998, p. 2).

Relationship marketing literature, however, often fails to include the communication process as a critical dimension in relationship building, focusing instead on elements such as trust and commitment, which are *products* of communication (Duncan & Moriarty, 1998). Relationship marketing transcends to face-to-face interactions that allow dynamic bargaining and communication processes that can dramatically change the attitudes, intentions, and behaviors of all involved (Jap, et al., 1999). Research conducted by Valley et al. (1996) supported the claim made by Jap et al. (1999), who claimed that a communication medium that receives asymmetrical information affects the efficiency and distribution of any possible outcomes. The results reflected how the effects of communication medium can be incorporated into behavioral decision research and modeling.

Communication processes, in terms of developing long-term buyer-seller relationships, show that trust and effort are believed to be central issues in which relationship quality depends heavily pointed out by Jap, et al. (1999).

CHAPTER III

METHODS

The purpose of this case study was to explore and describe the process of communication for those involved in the production, processing, and/or sale of beef cattle in Texas, as indicated by the components in the economic supply chain model.

The central question guiding this study was, what is the process of communication in the Texas beef cattle industry? At this stage in research, communication will be generally defined as the process of exchanging information between and among each individual, stakeholders and/or organization.

The sub-questions advancing this study were:

- Who are the people/stakeholders?
 - Who are they?
 - What do they do?
 - Where they do it?
- Who talks to whom?
- How do they talk to one another?
 - Environment/interaction among them?
 - Method of contact?

Design

The purpose of this qualitative study was to describe communications between and among stakeholders in the Texas beef cattle industry. We sought to describe the process of how

information is transferred across the industry, with whom it is being communicated, and the words being used to communicate the message.

Often, theory should emerge from the qualitative inquiry for the theory to be consistent with the paradigm that produced it (Lincoln & Guba, 1985). Therefore, it is imperative to be transparent when “we adopt any positivist principle or procedure” (Charmaz, 2005, p. 509). Additionally, “we must attempt to do so knowingly and to make our rationales explicit” (Charmaz, 2005, p. 509).

Occasionally, qualitative researchers begin their inquiry by introducing theory *a priori* (Lincoln & Guba, 1985). The practice of introducing theory a priori may be considered by some as positivistic (Denzin & Lincoln, 2005). However, if the inquiry is grounded in or closely related to a similar study, it may be acceptable if approached transparently and with reasonable rationale.

The Texas beef cattle industry is expansive, which, arguably, makes identifying a starting point for inquiry complex and difficult. An economic supply chain model of product and monetary flow within the Texas beef cattle industry, described by Herring (2013), identified the stakeholder groups, which served as a starting point for our constructivist inquiry that drew from case study and grounded theory approaches.

Case Study Approach

“A case study is not a methodological choice but a choice of what is to be studied” (Stake, 2005, p. 443). Further, “a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, 2014, p. 16). Because of the complexity of the Texas beef industry, “a number of cases may be studied jointly in order to investigate a phenomenon, population, or general condition” (Stake, 2005, p. 443).

We chose to employ case study as an approach because we believed an in-depth accumulation of personal accounts would explain and verify communications between and among the sectors of the Texas beef industry as seen in the economic supply chain model (see Figure 2).

Grounded theory approach

Grounded theory “emerges from systematic comparative analysis and is grounded in fieldwork to explain what has been and is observed” (Patton, 2002, p. 133). “Essentially, grounded theory methods are a set of flexible analytic guidelines that enable researchers to focus their data collection and to build inductive middle-range theories through successive levels of data analysis and conceptual development” (Charmaz, 2005, p. 507). Additionally, “grounded theory methods consist of simultaneous data collection and analysis, with each informing and focusing the other throughout the research process” (Charmaz, 2005, p. 508).

To adequately answer the central question of this study by describing and understanding the process of communication involved in the Texas beef industry, we have drawn upon the

grounded theory approach. We conducted interviews until data saturation was reached. Data saturation can be defined as the “means that no additional data are being found whereby the sociologist can develop properties of the category” (Glaser & Strauss 2011, p. 61).

The interview process was formatted based on a case study because the interview questions “resemble guided conversations rather than structured queries” (Yin, 2014, p.110). The open-ended interviews allowed the interviewee to answer questions that follow a “consistent line of inquiry” (Yin, 2014, p. 110) while allowing deviation for additional details that may otherwise not be included. Open-ended interviews allowed interviewees to elaborate on their specific role or roles in the beef industry and self-identify with a specific area of work. Additionally, the interviews allowed for the individuals to expand on who they communicate with, what they are intending to communicate, and the mode of communication with individuals in the industry on a daily basis.

Level 1 and Level 2 questions were used as guidelines for the interviewing process. Level 1 questions are “questions asked of specific interviewees” (Yin, 2014, p. 90). These questions are used as starting points for further and deeper questions. Some researchers believe Level 2 questions are more important than Level 1 questions because “the verbal line of inquiry is different from the metal line of inquiry” (Yin, 2014, p. 91). However, for this case study explicitly articulating Level 2 questions is both challenging and crucial to data analysis.

Context of study

The case study approach allowed us to develop the unit of analysis in which data would be collected. Unit of analysis is the boundaries that are established by the overarching research questions and the subsequent questions that complete the research project (Yin, 2014). To answer our research questions, we identified specific cases for each stakeholder and created a persona to describe the stakeholder's environment and personality based on Bandura's (1986) social cognitive theory. The accumulation of personas formulated one scenario of the Texas beef industry given specific characters from a specific background and financial investment in the identified four sectors of the Texas beef industry: cow-calf, stocker, feedlot, and packer (2013). By identifying the characters, we were able to focus on their interactions with one another based on their specific environment and behavior (Bandura, 1986).

Participant characteristics

Participants in this study included cow-calf producers, stockers, feedlot employees, and packers. These individuals were identified based on their perceived involvement in the economic supply chain model (2013) of production flow in the beef industry, as well as contacts that were referred to us from industry stakeholders. The economic supply chain model identifies six different areas in which beef products and money are transferred adjacently (see Figure 2). Interviews consisted of ten stakeholders within the first four sectors of the model: cow calf, stocker, feedlot, and packer. These individuals were voluntary interviewees that were recommended verbally from a variety of sources we encountered during data collection.

Measures

Trustworthiness incorporates the credibility, transferability, dependability, and conformability of our data collection. Credible findings and interpretations were used in the form of persistent observation, triangulation, peer debriefing, negative case analysis, and member checking.

First, persistent observation is used to add salience to the study to provide a depth to the data collected (Lincoln & Guba 1985). We used persistent observation to identify important and unimportant data from the interview process. We focused on the flow of information but specifically what information and the mode of transportation across the beef industry. We identified stakeholders to interview based on personal referrals.

Triangulation is the sources, methods, investigators, and theories that are used in verifying information using another source (Lincoln & Guba, 1985). Additionally, we have drawn upon economic and animal science principles to evaluate the data. Peer debriefing by exchanging notes between the interviews allowed us to maintain consistency as well as remove bias from the interview to focus on the content and information (Lincoln & Guba, 1985). Member checking is the final way in which we increased credibility within this project. This is a crucial technique that was used to confirm the findings from each interview. We assessed intentionality of the information collected, corrected any errors in regards to facts, and allowed for additional information to be added to the interviews.

Transferability is the ease of transferring ideas from one idea or setting to another (Lincoln & Guba, 1985). To increase transferability in our study, we thoroughly described our results and

model. In depth and proper descriptions allowed for an increase in ease of transferability to other sectors of the agricultural industry as well as other production-oriented industries.

Dependability is the utilization of a model or repetition of a concept without additional change (Lincoln & Guba, 1985). This was shown through the credibility process. By interviewing multiple sources from sectors of the beef industry, we utilized multiple perspectives to accumulate an accurate vision of the beef industry accounting for specific stakeholders. This formulated a model that drew upon each sector of the beef industry and accounted for a specific set of stakeholders.

Confirmability is the process of checking factual information by following up with each interviewee for a second time (Lincoln & Guba, 1985). This allows an individual to add or amend any statement that was made during an interview to ensure that the proper ideas were transcribed and understood. An audit trail was used throughout the project to ensure confirmability and consists of regular meetings with an outside auditor.

Reflexive journals from both researchers were utilized for data analysis. Debriefing was also utilized immediately after each interview by the interviewer. Each interviewer recorded written notes about the interview experience in a reflexive journal that was utilized during data analysis.

Sampling procedures

We used theoretical-based sampling beginning with cattle producers in Central and Northern Texas. A maximum of sixty-minute interviews were conducted with those involved in the Texas

cattle industry. Herring's (2013) model of potential communication in the beef cattle industry was utilized as an evaluation tool and model for the study. Sampling was done in two ways: personal relations and referrals, respectively. These were utilized to expand our contacts and interview additional stakeholders. The sample size consists of individuals from four of the different areas of the Texas cattle industry as see on the adapted economic supply chain model (see Figure 8). On average, the stakeholder of the first four categories of the beef cattle industry were white males who were approximately forty years of age or older.

Researcher bias

Katie is from northern Texas and was raised on a cotton farm. She was heavily involved in the Texas FFA and her family raised cattle for thirteen years. At Texas A&M University, Katie is studying animal science and agricultural communications and journalism. She has also built strong relationships with professors across the College of Agriculture & Life Sciences serving as the College of Agriculture & Life Sciences Student Council president.

Additionally, Katie works for the Texas Water Resources Institute. She also serves as a recruiter for the Department of Animal Science, is a member of the College of Agriculture & Life Sciences Student Council, and previously interned with the National Association of State Departments of Agriculture in Washington, D.C. After graduation in May of 2014, Katie will move to Amarillo, Texas to begin her career with the Texas Wheat Producers as the Director of Communications/Producer Relations.

Victoria is from central Texas and began her involvement with agriculture through the production of livestock. She was heavily involved in the Texas FFA and raised beef cattle for approximately eleven years. Victoria raised beef cattle to show in Texas livestock shows for eight years and raised heifers to begin her cow-calf operation. At Texas A&M University, she is studying animal science and intends to pursue a career in the animal agriculture industry after graduation.

Outside of class, Victoria works in the Department of Animal Science and has built close relationships with professors and faculty in the department. She also serves as a recruiter for the animal science department. Victoria is heavily involved in student organizations such as Farmers Fight, Saddle & Sirloin, Leadership Fellows, and Freshman Leadership Experience.

Because we used an inductive approach to our research process, it was initially difficult to narrow what could be the reason, if at all, why a communication gap may exist. Having open-ended interviews was a challenging feat, especially because we were unsure of the direction the responses would lead us. It was through our patience and background knowledge of the industry that we were able to understand that we at least needed a variety of representatives to allow for a well-rounded data analysis and sample of the industry. It was through that understanding that we noticed a trend in answers that were not prompted by us asking the same question among our interviewees. This prompted us to realize that while disconnects may be due to different terminology or definitions associated with food-based agriculture products, we needed to focus on the basics and first identify the means and modes of communication before dissecting differences in definition interpretation.

CHAPTER IV

RESULTS

The purpose of this study was to describe the communication process between and among stakeholders in the Texas beef cattle industry. This study was guided by one central question:

What is the communication and interaction between sectors of the beef supply chain?

Additionally, we used several sub-questions to guide our inquiry: who are the people; how do they interact; what do they say; and what is the process of communication? In our findings, we propose a reconstructed beef supply chain model that incorporates a communication piece; confirms Herring's (2013) model for potential communication; and the addition of a support system segment, consisting of organizations and associations, to the beef supply chain model.

Environmental determinants

The Texas beef industry is unique because Texas is a large state that varies in climate from north to south and west to east. People involved in the beef industry are unique as well because of their relaxed demeanor and southern hospitality habits. The individuals described in this study did not have a nine to five work schedule. They answered questions when they were off the clock. Many individuals treat their careers in the beef industry as a lifestyle rather than a job.

Personal determinants

We transcribed and analyzed our interviews to determine the key players of the supply chain model and how, based on the responses, a model emerged from the data. We created a persona to represent each entity based on the interviewees' personalities, interview locations, mannerisms,

conversation etiquette, interviewers' bias, etc. during the interview. Each persona will be identified with a name followed by the sector that they are associated with in the economic supply chain model. Interviewing several members and entities associated with specific sectors of the supply chain, allowed us to see that although several of the individuals represent a certain sector of the chain collectively, there also tended to be non-congruency among individuals and entities of the same sector.

Character personas

Tom – cow-calf producer

Tom is a 72-year-old grandfather of five and an established Charolais cattle producer. He breeds cows and sells the heifers and bulls to other breeding operations. He naturally breeds cattle and does most of the work by himself.

“I’ve gotten to where I am taking care of 600 acres and 100 cows. And that is just cows not counting calves or bulls...” (Tom; TS_009_8886_89).

Tom's generational tendencies make it appear that he has little faith in the next generation, which is why Tom is located in the first sector of the economic supply chain model in Figure 5. Even though he is set in his ways he is aware of concepts such as hybrid vigor and other forms of communication. He has not adopted them because it doesn't fit his operation. He has started a very profitable business and does not believe that he needs to advertise. He gets business through private treaty and word of mouth. Tom does not have an email so a phone call is the best way to

contact him besides finding him around town. He is a member of the Young Farmers and socializes over coffee at the feed store in the morning.

“Years ago, I mean, I would run some ads in the local paper. Sometimes on the radio the local radio has some want ads deal that goes out on the air but I haven’t had to do that for a long time. They are going to sel.” (Tom; TS_009_8886_38).

Tom’s choice to use personal contact and the telephone does not mean that Tom does not have the means or is aware of communicating in a more “modern way,” but rather he does not need or have to because he is locally known. He advertises most efficiently by word of mouth even though he once advertised through the newspaper. Beyond his clients, he believes he has little communication with other sectors of the Texas beef industry.

Luther – cow-calf producer

Luther is from central Texas and is well known because he currently lives in his hometown and works with lots of beef entities, including the Extension office. Additionally, Luther ran for county judge in the spring elections. He manages his own crossbred cattle that he raises and sells. Luther is also the ranch manager for an Angus operation near his home and travels to the other ranches across Texas. Luther is familiar with other sectors of the beef cattle industry because he has direct experience working in the other sectors.

“...Four or five years ago, I was mainly a feed lot operator back then. At one time my partner and me had close to 2,000 head of cattle on feed. We were buying them as a

stocker, keeping them for about a month to get them straightened out and then sending them to the feedlot” (Luther; TS_009_8886_49).

Luther checks on the cows daily and he artificially inseminates the cattle himself. He has a wife and young daughter in her early teens, so he is aware of and has adapted technology such as email and the web. Luther falls into the second cow-calf sector of the economic supply chain model in Figure 5.

Keith -feedlot

Keith is part of a finishing feedlot in the Texas Panhandle. A finishing feedlot is a feedlot that will raise cattle until a predetermined weight is met and then sends the cattle to be slaughtered. Keith’s feedlot markets about 20,000 head of cattle each week totaling to over two million each year from several states. Keith’s feedlot has identified one packer that they will market, or sell their cattle, to. They are a centralized operation—meaning even though they have several locations, all cattle and feed are bought out of a central office. Keith would say that his feedlot’s business model is focused on production, weight and quality of the cattle that come to their lot. Keith mentioned that because his feedlot buys cattle from a variety of producers and outlets, (i.e., cow-calf operations, stocker operations, and auction barns) conversations are different to reflect the different people he buys from.

Keith also notes that conversations are not only different to accommodate different people or operations they are buying from, but are also dependent on the relationship with those individuals. Conversations can be short or long depending on that relationship, Keith states.

“Well if I am dealing with someone who is in the business of buying and selling cattle on a daily basis, that conversation is probably going to be very short...He knows that I am looking for...It is going to be all business, I mean a very high level professional and efficient conversation” (Keith; TS_006_2081_410).

Relationships with operations or individuals selling to Keith’s feedlot are important enough for Keith and his buying team to have met face-to-face with them at some time during the existence of the relationship. This is especially true when new individuals or operations start selling their cattle to Keith’s feedlot. Keith and his team will personally meet face-to-face, communicating with them, to establish a working and reliable relationship.

“Yes, there are guys that we have done business with years upon years upon years...That relationship that I personally have with them was created over time of doing business with them. I would say that 80% of the people that I do business with, I know personally. If I were to see them in a restaurant I would know them” (Keith; TS_006_2081_469).

I was even able to see the relationship Keith has with his team members in the office. It was easy to see that the interviewees were all very comfortable with each other and not afraid to poke jokes before and after the interview. The relationship went well beyond the scope of business. It was mentioned that even though vendors or those selling cattle or grain to Keith’s feedlot may not need to do business with the feedlot at the time, the relationship is maintained and there is constant conversation.

“...there may be stuff going on in the market that I know that he doesn't know. Sharing knowledge and resources” (Keith; TS_006_2081_653).

People at Keith's feedlot understands and realizes that the transaction of buying and selling cattle is what is going to make his feedlot profitable, but it is the relationships that allow the transaction to occur in the first place. There is a stronger emphasis on relationships first then transactions.

“I am going to tell you as a cattle business, the general rule of thumb is that it is all about relationships” (Keith; TS_006_2081_493). “Because you are not going to beat the market. The market is going to give you a range, tell you what it wants, how much it wants. You can go and get that same bid or offer anywhere else, but you are going to do business with people you have a relationship with, that you can trust and the money is good” (Keith; TS_006_2081_501).

Keith said the biggest influence and bluntest form of communications between those his feedlot buys from and sells to is economics.

Randy - feedlot

Randy is part of a finishing feedlot in the Texas Panhandle that is owned by a company with ties and operations in both the poultry and pork industries. Randy's feedlot will market over two million head of cattle each year from several feedlots in a combination of states. Randy's feedlot markets or sells their cattle to a packing plant also owned under the same company his feedlot is

owned under. The feedlot owns a majority of the cattle that are sold to them, but they also have a small percentage of custom cattle that are owned by other operations or producers that they will feed out. Randy's feedlot buys all of their cattle out of each office, where the general manager at each location is in charge of buying cattle specifically for their own feedlot. Randy's feedlot has also been known to give tours to individuals from outside of the country due to the feedlot and company's emphasis on exporting their products.

Randy grew up in the Texas beef cattle industry and has seen the industry change during the time he has been associated with various sectors of it. Randy's feedlot buys the majority of the cattle used in his feedlot through order buyers that will either attend sales at auction barns or will drive to a producer's operation in the country. Randy, however, notes that in the past couple of years, his feedlot has found an importance of meeting personally with producers or operations selling cattle.

"We have spent more time out in the country talking to people, talking to ranchers, talking to farmers who have cattle... We made a goal for ourselves, as an operating team, to get more involved and to communicate more with producers, to get our name out there and tell them what we represent" (Randy; TS_007_2081_132).

He points out that with a declining number of cattle that will be going through the market in the next decade, Randy's feedlot wants to be one of the first feedlots producers will want to sell their cattle to, because there will not a lot of cattle to go around; they want the best opportunity to buy the best cattle that producers can offer. Randy's feedlot has made a point to schedule producer

meetings in the areas of the country they buy cattle from to get the feedlots name to producers and begin establishing relationships.

“...Gather a bunch of producers, visit with them, maybe cook them dinner and just communicate with them, tell them what we do, where we are located and just tell them to give us a call if they wanted to sell their cattle... We have spent a lot of time out in the country and the reception we have gotten from people have been really good. A lot of people don't really know who we are and what we do” (Randy; TS_007_2081_143).

Randy said even though his feedlot does a lot of work with people in the industry on a daily basis, he also sees where there is a huge disconnect, even today due to those in the industry having to operate within a certain margin.

“I spent a lot of time talking to them saying here is what we do. A lot of guys are margin guys. If you are a stocker, you buy this animal at this price, you have this much input and you need to sell him for this price to make some money, so that's a margin” (Randy; TS_007_2081_163).

Randy and his feedlot believe that the end consumer are their main customers, but realize that they lose control of the product when the cattle or product leaves their feedlot to go to the packer. He notes that the feedlot does everything they can from a quality assurance and proper animal handling and welfare side to ensure the consumer has a safe product. His feedlot also

takes information they receive from the packer about how the cattle will grade in the plants and transfer that to the suppliers they buy cattle from.

“It is really a hit or miss deal in terms of really helping the industry. I think any communication you can give them to help their operation is good and we try and do that as much as possible” (Randy; TS_007_2081_177).

“...It is a lot of relationships and it is a lot of trust in the cattle business...Occasionally that ere are some hard feelings, but we trade thousands and thousands of cattle over the phone or on a handshake” (Randy; TS_007_2081_211).

Randy believes that relationships affect and influence his feedlot’s communication the most to his sellers and buyers, but also that the time of year also dictates how much his feedlot works and communicates with buyers or sellers.

Randy and his feedlot use conventional ways of communicating to those they sell to and buy from: i.e., phone, email and fax machines.

Randy believes that although some in the industry still work in a cut-throat way, many in the industry have left and have become more about helping out everyone in the industry to get better at passing on information back-and-forth among each other.

“This industry in the past has been more about let’s see how much money I can make and see how much I can make you lose...So we have to form these partnerships and relationships with people in order to get better...There are a lot of guys that think that way – if we could all get that way, which would be tough, that would help our business as a whole...” (Randy; TS_007_2081_200).

“Everything is price driven but I wish...we could be a little more sensitive to what consumers want...we have made these cattle pretty big but I don’t know if people want bigger...But if we take their: the consumer, the retailer, the purveyor and the people that buy wholesale beef, if we take their comments back and say ‘hey let’s try to do this or do this better’...and I think we are getting better at that and of course the same way with the producers. They are getting better at taking our feedback...I think down the chain, it is better than it used to be...there are fewer people in the game. With fewer of us, we are able to communicate a little bit better and pass that information back down the chain, and people are more open” (Randy; TS_007_2081_383).

Randy and his feedlot believe that those associated with the industry are very protective, especially in his feedlot sector of the supply chain since their particular sector is not obviously the most popular, but that those in the industry need to be open about what they are doing.

“I think we need to be more open as an industry ... we need to be promoting our industry and not hide it behind anything” (Randy;TS_007_2081_440).

Jared - packer

Jared has seen his packing business grow throughout the years because he was raised around it. He had high aspirations of going to vet school but continued what his family had been doing and what he had a passion for.

“I have been in the meat business all my life. I am a fourth generation in the meat business. Me and my brother bought this business in 1991 and opened it in 1992. And we custom process and wholesale. We kill beef hogs goats and lambs” (Jared; TS_009_8886_09).

Jared’s communication with others in the industry is based on relationships. He is able to make small talk with his employees and others in the industry before discussing business.

“You know we have been dealing with them so long that they kind of like family and friends but we still get down to business when there...” (Jared; TS_009_8886_144).

Jared lives and runs his business in a small town but understands the history of the beef industry and has predications of the future based on current issues.

Bryan - association

Bryan is currently a part of an association who represents the cattle-feeding sector of the beef industry in Texas, Oklahoma, and New Mexico. The association has about 200 feedlots that are members. This covers about 30 percent of the cattle-feeding sector of the United States. The

association is completely 100 percent voluntary for feedlot operations to join—no funding from the Texas beef check-off program or any other program are directed to the association; dues are paid voluntarily by participating members. Bryan’s association represents the cattle feeding-sector on legislative issues and was founded on the principal of need for more market information and the exchange of market information on cattle prices regarding buying cattle for the feedlots and what the cattle were being sold for to the packers.

Bryan’s association has internal member-to-member communication that sends information to participating members and tailors those messages to feedlots from a proactive, what is occurring in the industry perspective, and from a reactive, response to negative publicity or reaction to a food safety crisis, perspective.

Bryan recognizes the association’s essential communication is relaying market trends, regulatory compliance information, and where the association is at on various legislative issues. Bryan says his association does the majority of their communication to their members based on a certain need.

“... We probably do more communications...push more information out to our members...based off of a certain need or certain request or certain specialty or topic that has come up. It may be related to certain working on that they have questions about or want clarification, but it is also going to those programs where we provide them with assistance or technical expertise where they are calling to resolve a specific issue they are facing” (Bryan; TS_007_2081_25).

Bryan also mentioned that the association has a public communication aspect and provides a weekly newsletter online that is accessible to the general public and written so the general public understands the information.

“the type of information...in say our weekly newsletter, or in our cattle feeders annual...out there in the public domain, those articles and that messaging are crafted with the understanding that its likely to be read by anyone in the world” (Bryan; TS_007_2081_21).

Bryan’s association’s communication is very traditional with using phone, printed newsletter, mailed correspondence and faxes with the gradual transfer to online communication. Most of the information and communication to the feedlots are still print based, whereas communication to the general public has a more social medial based mode that tells what the association is doing, the good things about the industry and the good things about eating beef. Bryan also notes that the general public will most often receive the same information that the participating feedlots receive, but that the feedlots get more in-depth and insight into an issue and what the game plan will be on how to deal with it. These issues are generally things the public has no generally interest in such as permit issues and environmental compliances.

They also occasionally do public information campaigns that include going to a civic club or doing a newspaper insert in the beef cattle area of the Texas panhandle.

“Another thing we do is try to message every so often whether its insert in the newspapers or presentations at civic clubs we try to tell of the economic benefit of the industry in the regions, so that is more of a local thing, the scope of that information is generally targeted to the areas where the feed yards reside. We are big enough that we even have an impact on the state revenues when it comes to production in Texas” (Bryan; TS_007_2081_175).

Bryan works closely with other organizations and associations related to the beef industry in Texas, as well as counterpart associations in other states and on a national level with USDA, former employees and educational institutions in the state of Texas, all in hopes of representing the beef industry.

“There are an extensive amount of communicators and coordinators at the national and state level and not just here in Texas and our counterpart associations that are in other states, coming together of all of those entities to serve that same purpose of representing whether that is the cow-calf, the rancher folks, the feed yard segment or even the packers themselves” (Bryan; TS_007_2081_125).

The beef industry is a very personal industry, as Bryan and his association colleagues respond in the interview. It is built on relationships and the longevity of people in the industry regardless of where they are in the chain.

“The only other aspect of the communications deal is that, well of course this is still the beef industry itself, is that the beef industry is a people business. And so some of the reasons we, the longevity of people in the industry helps, but also the longevity of people at the association level or different points of contact having that voice, face, recognition. Some we develop more personal relationships with people over time, but just having that familiarity with certain people, both within the beef industry and a lot those other sectors that have an effect on us, at the legislative or regulatory level” (Bryan; TS_007_2081_312).

“It is, that communication among those differ associations, there those conversations are more non-competitive in nature between region and sectors, kind of those talks for the good of the industry. Things where it is not an issue, where the ranchers and the feed yards are diametrically opposed on something, its more about where they can come together as a group up and down the supply chain to get what we want or to beat this deal down” (Bryan; TS_007_2081_283).

David - association

David is a part of a cooperation and business that represents both feedlots and cow-calf producers. His company covers several states in the stretch of cattle feeding country. The cooperation has been founded as a marketing cooperation. They also offer services in hybrid risk management in terms of futures market values. Communication to their members is determined by what the topic of discussion is.

“And then the communication audience is determined by what the topic is. Is the topic, well what are you wanting to buy, then it is the cattle buyer. If it is about beta agonists, then that is going to be about the beef procurement” (David; TS_022_2081_113).

David and the cooperation have also actively communicated and transferred information to and from the end users, consumers, and retail sectors of the supply chain, even they do not have direct business transactions with those sectors. David’s reasoning is try and correctly understand from the end users what is going on in relation to consumer demand in their area of business.

“...our relationships with distributors, service restaurants, white cloth restaurants, meat traders, all kinds of end users. We are constantly trying to understand the state of demand and the direction and we meet up because it’s not that we don’t trust the packer, it just really helps us gain a better volume depth of understanding of the state of the market place. It is all about having unbiased counselors” (David; TS_022_2081_150).

By talking with the end user or other sectors in the supply chain, David’s cooperation has been able to gain a better understanding of the current market place today which allows them to communicate and interact better with their customers—helps them pursue their mission of getting reliable information to the feedlots and producers.

“We think it is very important because it gives us a better more clear understanding of the reality of the marketplace today” (David; TS_022_2081_227).

David believes that the industry has a variety of objectives due to transfer of ownership, which leads to a variety of audiences and communication to those audiences is going to vary.

“You have the packing sector, you have the feeding sector, you have the cow-calf and stocker sector and ownership transfer from one sector to another, and that is changing to a degree. There is just a lot of different audiences with a lot of varying objectives in the industry” (David; TS_022_2081_176).

Also states that market signals in the industry could be lost due to segmentation in the industry between sectors.

“With the economics, whatever signals are sent, will be responded to. If the end user is sending that signal then they will get it, but unfortunately with that segmentation in the industry, often times, that signal will not get properly sent to the cattle” (David; TS_022_2081_195).

David and his cooperation believe that they serve as a support system to their members by passing on needed information for their customers to make well educated decisions to in turn help the industry collectively.

“We can do all the work, negotiating and finding a market for their cattle, but they have to make that decision themselves. If they are educated and we have done our job, then that helps them make a decision easier” (David; TS_022_2081_249).

Although David's interview was on the phone and we didn't get the personal face expressions, we could definitely tell when David emphasized various points during the interview. It also seemed laid back partly due to our parents and families having had some interaction in the past – also could be based on friendly panhandle common ground associated with one of us researchers and him.

Data analysis

The character personas were created to represent the interviewee's personal and environmental determinants based on Bandura's social cognitive theory (1986). Field notes were formatted with two columns for data analysis: one column contained direct quotes from the interview transcript and the adjacent column contained the interviewee's observation notes. The format assisted in analyzing the data and formulating the personas.

The coding of the interview transcripts are denoted by the field notes report. The interviewee's persona name, the Julian date that the interview was conducted, the Texas A&M University student identification number of the interviewer, and the document line number follow each quote.

Modes of communication

After transcribing our interviews, we constructed Figure 3 that listed of all available means of communications for each individual or entity. These means of communication were directly pulled from each interview and included all forms of communication that the individual or entity

either received or sent information through. This illustrates the possibility of communication problems if two entities or individuals did not have the same modes of communication in their “tool box”.

MODES OF COMMUNICATION Received and transmitted	
- Personal Visits - Phone Calls	- Mail/Print - Email
- Website - Facebook	- Text Messages
Tom (Cow/Calf)	
Luther (Cow/Calf Manager)	
* Keith (Feedlot)	
Randy (Feedlot)	
Jared (Packer)	
Bryan (Association)	
David (Association)	

* Entities with multiple interviewees from one location were collapsed to form one unit to protect confidentiality.

Figure 3. The coding system we used to indicate potential communication opportunities between each sector.

A communication matrix was constructed from Figure 3 when we cross-referenced each individual or entity to the individuals or entities that we knew, from the supply chain model, that communicated to each other to move the product. We diagrammed each cross-reference and indicated the actual mode of communication that took place between and among those sectors compared to what means those sectors were capable of communicating through. The means of

communication that were the same for the two individuals or entities we cross-referenced were included in the square they met. This is shown in Figure 4.

	Tom (Cow/Calf)	Luther (Cow/Calf Manager)	* Keith (Feedlot)	Randy (Feedlot)	Jared (Packer)	Bryan (Association)	David (Association)
Tom (Cow/Calf)	---		---	---	---		---
Luther (Cow/Calf Manager)		---					
* Keith (Feedlot)	---		---				
Randy (Feedlot)	---			---			
Jared (Packer)	---				---		
Bryan (Association)						---	
David (Association)	---						---

* Entities with multiple interviewees from one location were collapsed to form one unit to protect confidentiality.

Figure 4. Potential communication opportunities between each sector. Green indicates utilized communication and red indicates no communication that occurs.

From our interviews, each way the two entities actually communicated were indicated by green symbols. Those that did not utilize a communication medium in their tool box were identified with a red symbol. Several groups had the means to communicate but did not fully utilize it for a variety of reasons such as convenience, personal preferences, or financial concerns. This supports the literature that since there might be inconsistent representation of a certain sector, that messages leaving that sector will be variable (Duffy, 2005).

Economic supply chain model

In parallel with social cognitive theory, Herring's (2013) model of potential communication provided initial guidance for this study. We described how entities in the Texas beef cattle industry communicated and incorporated aspects of communication into the economic supply chain model in Figure 2. To better understand the complex relationship among elements of the model, the complete model was disassembled into smaller components:

We began by removing the multiple lines representing product and monetary flow from the model. We then replaced the multiple lines with a single dotted line with double-ended arrows to show communication as the focus of the model. Product flow and monetary flow are illustrated below the model as a secondary and tertiary component, as seen in Figure 5.

After replacing the lines with the communication flow we separated the feedlot and packer sectors to better represent the flow of communication between sectors. It is our interpretation that rather there being an equal distance among each sector of the supply chain, we believe there is a larger gap between the feedlot and packer sectors due to the lack of communication between these entities. Based on product and monetary flow, communication is heavier and more frequent between the left portion of the model and the right portion of the model. Although, communication occurs throughout the model it is weighted heavier in our model on polar ends.

Additionally, we added a second cow-calf sector to the left portion of the model. Based on the conducted interviews we separated the original cow calf entity and added a second unit based on

the product flow of cattle. The flow of cattle appears to directly affect the utilization of communication. This can be seen in the character personas of Tom and Luther.

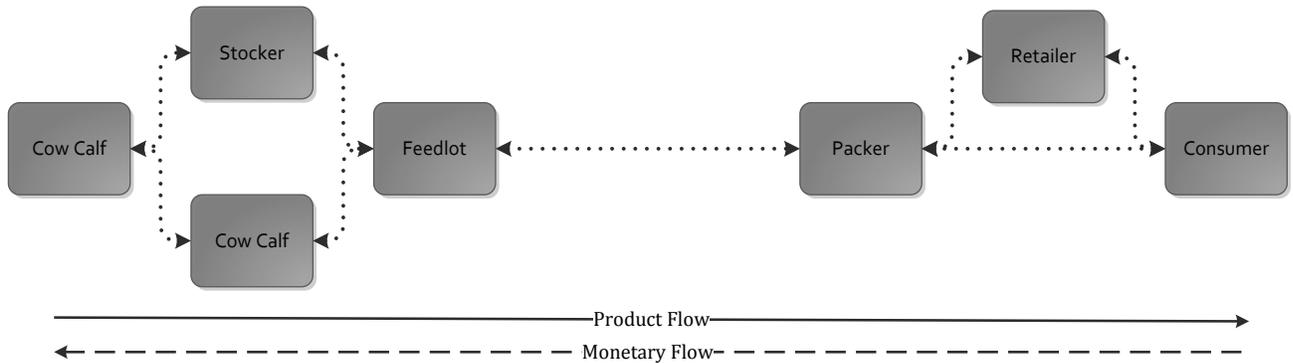


Figure 5. Reconstructed economic supply chain model. Product flow and monetary flow were removed from the model and replaced with the communication flow as the core of the model.

Furthermore, open communication among sectors instead of linearly sequential communication is identified by the incorporation of an additional line in Figure 6. By comparing what we learned about individuals, who they are and how they interact, we altered the new supply chain model once again. This time we added an additional line of communication between non-adjacent entities. The dotted lines in Figure 6 are confirmed communication paths rather than potential communication paths as seen in Herring’s model (2013 2013).

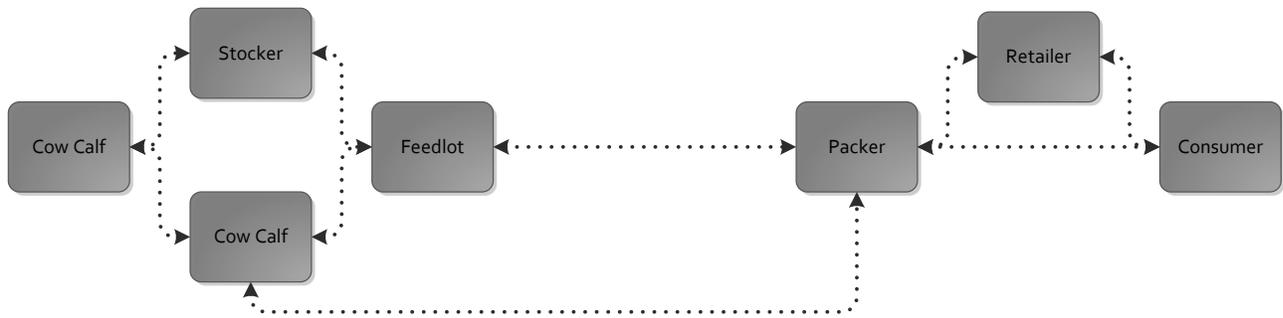


Figure 6. One additional dotted line was added to the bottom of the model after data collection and analysis. These communication paths were validated through data collection.

Unlike any of the literature or supply chain models suggest we have included organizations and associations into our communication model, as seen in Figure 7.

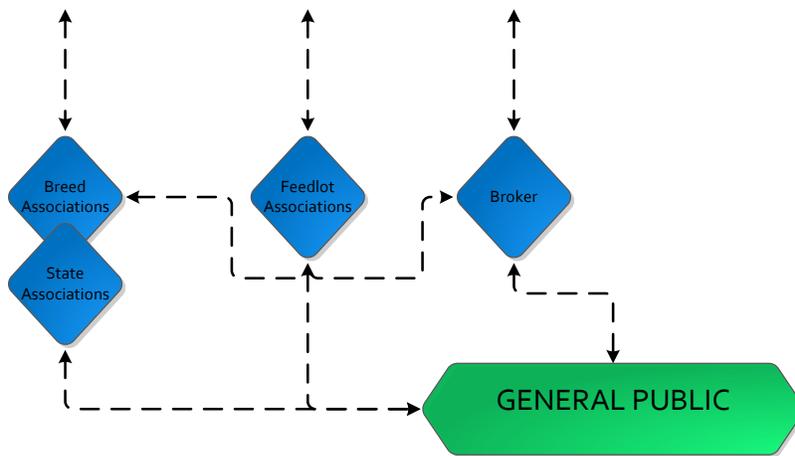


Figure 7. The addition of associations and outside organizations to the communications model.

By including organizations and associations into our data collection, we were able to see the impact in communication flow between the basic main sectors of the supply chain, including cow-calf, stocker, feedlot, packer, retailer and consumer. Each sector identified with an outside entity in regards to gathering information about the industry.

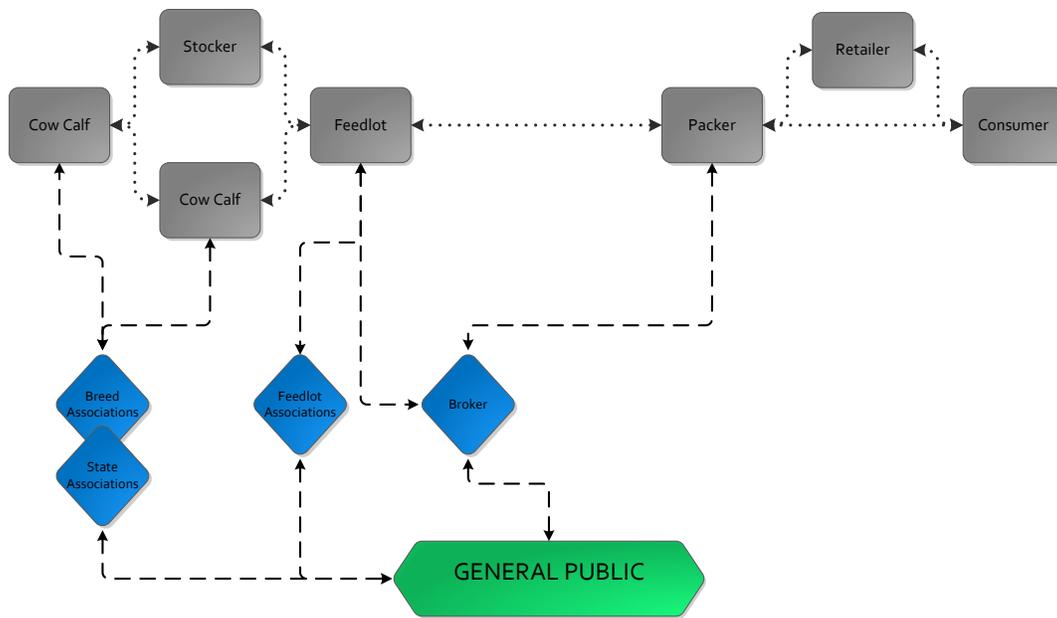


Figure 8. The completed model of the communication-economic supply chain model.

It is important to acknowledge that the basic structure of the Texas beef supply chain would be able to get product from the producer to the consumer and money from the consumer to the producer without the aid of associations and organizations. However, when adding a communications component to the model it is crucial to incorporate these associations and organizations into the model. These entities do not fall within or between the model, so they were incorporated into a lower section that does not intersect with product or monetary flow. These groups can sometimes be associated with a specific sector but do not belong adjacent to any sector. Although the Texas beef supply chain could keep producing product and “stand on its own,” the associations and organizations associated with sectors in the supply chain help expose communication and encourage the exchange of information. These individuals are identified by the character personas of Bryan and David.

Because the industry has recently acknowledged consumer transparency as a key to industry success, utilizing associations and organizations connected with the sectors of the chain as a support system can allow direct and efficient steps towards consumer transparency.

Organizations and associations identify market signals and communication among sectors and work with specific sectors to increase or decrease product and monetary flow as indicated by consumer and market demand. The utilization of associations is critical in the success of the Texas beef industry.

Furthermore, associations and organizations associated with the Texas beef industry can be visualized and explained as an elevator with two doors or methods of entry. The different levels that the elevator travels to are the various mediums that these groups can utilize. For example, floor one will be the publication of newsletters, floor two will be the distribution of emails, and floor three will be the use of social media.

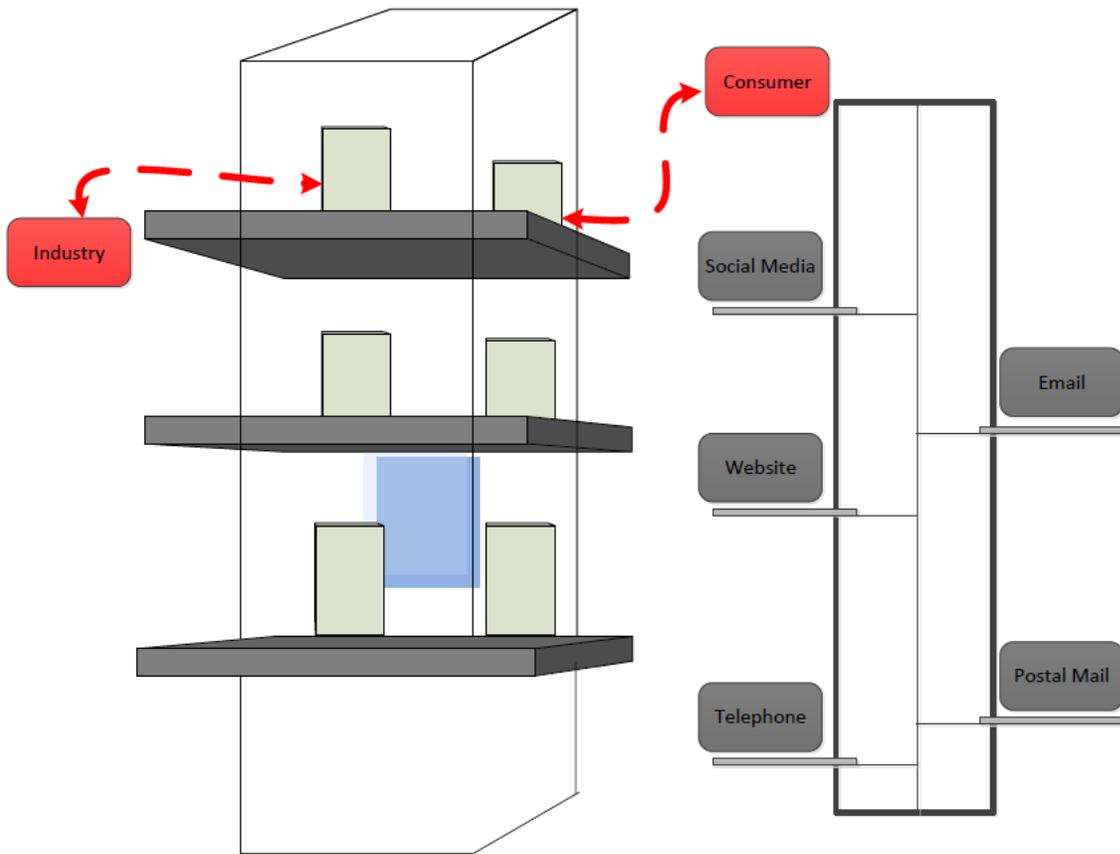


Figure 9. The associations can be explained through an elevator analogy.

The two doors of the elevator distinguish the two audiences that the associations communicate with. One door leads to the consumer and the opposite door leads to the beef industry. These associations expedite the process of communication between and within sectors of the economic supply chain model.

CHAPTER V

DISCUSSION

Initial premise

Although we initially believed or thought it was possible for a communication gap and/or consumer preferences to exist due to differing definitions or terms used throughout the process of production, we observed where a gap may exist if entities do not communicate with one another as indicated in Figure 4. Previously, we stated that the most notable, external influences included the transfer of money and market signals that directly influence supply and demand. However, in several of our character personas, it is notable that simple economics of creating a product for sale was also an influence of communication among sectors.

Our initial assumptions suggested communication may have a notable role in supply chain models, but our findings indicate that preexisting conditions or product flow requirements of a supply chain may ultimately have a greater impact on communication. It was noted in the character personas that each sector or entity in the beef market has to work within a certain margin to be profitable. To move product to the next sector, there are few daily operations that are not controlled by simply being associated with a sector in the market. With limited ability to move outside of his or her margin (economic principles), those financially invested in the beef industry must work to become profitable by integrating monetary investments and meeting consumer demand. To efficiently meet consumer demand the message from the consumer to the beef industry must be accurately transferred to each sector. Using all available means and/or

modes of communication to move a message and product must ultimately be profitable to each associated party.

Theory and limitations

Initially, social cognitive theory was used to guide our inquiry into the different aspects of the Texas beef industry that may potentially affect the communication process. Environmental determinants have noted regional and contextual limitations noted in the literature and confirmed through the interview process. Through the interview process, personal determinants became evident and were specific to each individual after taking into account the environment. Our study confirmed our initial application of Bandura's theory that was supported by the literature.

When implementing social cognitive theory for this study, the focus of the study alluded to the idea that the behavioral determinants (communication process) would influence the established personal and environmental determinants identified due to the availability and utilization of communication modes. However, the data indicated that personal and environmental determinants may dictate the communication process because of each sectors necessity to achieve the baseline breakeven costs to remain in business. Once profitable, the sector can focus on the communication within and between sectors using a variety of modes. A motivation factor (money, consumer demand, industry transparency) must be evident for various communication methods to be studied, adopted, and implemented.

The literature is difficult to relate to this specific study, most documents dated back as early as 1974 and very few publications directly related to the focus of this study were evident in the

literature. Of the articles we reviewed, a common concept emerged: Many factors influence communication and communication creates relationships, which in turn disseminates knowledge. Our findings have revealed a common theme of the importance of relationships within the Texas beef industry.

The limitations of this study exist in the personal determinants of each sector of the Texas beef industry that are directly influenced by the environmental determinants. The case study approach utilized in the study allowed for specific character personas to be created that are indicative of one type of individual from a sector. The sectors of the communication economic supply chain model can and do contain more than one type of character persona due to the limiting factor of personal determinants. It is crucial to identify the limitations of the communication economic supply chain model before applying it to a different scenario within the Texas beef industry or another applicable industry.

As indicated in our findings, we can confirm that Herring's (2013) model for potential, open communication among and between sectors can unquestionably happen (Figure 3). Some communication paths occur more frequently than others and some have not been verified by our study. However, with the integration and support of organizations and associations into the beef supply chain model increased communication can be seen.

Implications

Our study focused heavily on the cow-calf, stocker, feedlot, and packer sectors in our interviews. Further information about the right side of the supply chain, the retailers and consumers, needs to

be studied. Collecting additional data from the consumer and retailer segments of the economic supply chain model would allow for additional knowledge on the communication with the consumer ,thus, completing the communication-economic supply chain model in the Texas beef industry.

This research was approached inductively using a grounded theory to tailor our data collection to specific focus areas. The focus of this study has created the foundation for future research that will assist in answering research question two. Further research is necessary in these specific areas:

- Conduct additional interviews with retailers and consumers. Additionally, conduct more interviews from each previously interviewed sector to validate model and findings and incorporate personas that were not apparent in our beginning research.
 - Include associations and different types of character personas for each sector to account for diversity within a sector.
- Study the semantics used in the beef industry.
 - Are the definitions and interpretations of words the same across the industry?
 - How do the public and the use of media affect the messages sent by industry representatives?
- Motivation factor for communication within and between sectors.
 - Utilizing all tools in the communication toolbox.

The potential for communication and the actual exchange of information vary, especially when the two entities communicating do not share the same modes of communication in their

communication toolbox (See Figure 4). Certain circumstances such as Tom's character persona, someone may only reach him by personal visit or through a phone call not because Tom is not aware of more modern means of communications, but because he does not believe that he needs to communicate through those means for his business. Tom's status within in the community and ability to advertise his business by traditional word of mouth has satisfied his communication needs. There may be benefit to further investigating how individuals' position in their community and industry may also influence communication.

A higher level of transparency in the Texas beef industry may be reached if each sector utilized additional modes of communication, which may lead to increased consumer confidence in products such as those supplied through the beef supply chain. The importance of Figure 7 comes into play in this scenario. When associations and their communication toolbox are added to the industry, information flow is increased.

With an increase in transparency supporting an increase in consumer confidence, there is the notion that beef products will see larger consumption that could benefit producers financially and in their production methods.

REFERENCES

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, N.J: Prentice-Hall.
- Bordenave, J.D. (1976). Communication of agricultural innovations in Latin America: The need for new models. *Communication Research*, 3(2).
- Bruhn, C. (1995). Strategies for Communicating the Facts on Food Irradiation to Consumers. *Journal of Food Protection*, 2, 128-222.
- Charmaz, K. (2005). Grounded theory in the 21st century. In Denzin, N. K., & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (pp. 507-535). Thousand Oaks: Sage Publications.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches*. London: Sage.
- Denzin, N. K., & Lincoln, Y. S. (2005). *The SAGE handbook of qualitative research*. Thousand Oaks: Sage Publications.
- Duncan, T. & Moriarty, S.D. (1998). A communication-based marketing model for managing relationships. *Journal of Marketing*, 62(2), 1-13.
- Duffy, R. (2005). Reconnection in the UK food chain: Bridging the communication gap between food producers and consumers. *British Food Journal*, 107(1), 17-33.
- Flynn, J. (2013, Oct). Agricultural Career Day Exposition. Presented at the Department of Animal Science beef production class, Texas A&M University - College Station.
- Glaser, B. G., & Strauss, A. L. (2011). *The discovery of grounded theory: strategies for qualitative research*. New Brunswick: Aldine Transaction.
- Jap, S.D., Manolis, C., & Weitz, B.A. (1999). Relationship quality and buyer-seller interactions in channels of distribution. *Journal of Business Research*, 46(1), 303-313.
- Kraemer, H. C., & Thiemann, S. (1987). *How many subjects? Statistical power analysis in research*. Newbury Park, CA: Sage.
- Lasswell, H.D (2007). The structure and function of communication in society. *Communication Theory and Research Journal*, 24, 215-228.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage.

- Merriam-Webster, Inc. (2009). Merriam-Webster's dictionary of basic English. Springfield, Mass: Merriam-Webster, Incorporated.
- Mish, F. C., & Merriam-Webster, Inc. (2009). Merriam-Webster's collegiate dictionary. Springfield, Mass: Merriam-Webster, Inc.
- Manis, M., Douglas Cornell, S., Moore, JC. (1974). Transmission of attitude-relevant information through a communication chain. University of Michigan and U.S. Veterans Administration Hospital.
- Nabi, R. L., & Oliver, M. B. (2009). The SAGE handbook of media processes and effects. Los Angeles: SAGE.
- Patton, M. (2002). Qualitative research & evaluation methods. (3rd ed.) Thousand Oaks, CA: Sage.
- Stake, R. E. (2005). Qualitative case studies. In Denzin, N. K., & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (pp. 443-466). Thousand Oaks: Sage Publications.
- Valley, K.L., Moag, J., & Bazerman, M. H. (1996). 'A matter of trust': Effects of communication on the efficiency and distribution of outcomes. *Journal of Economic Behavior & Organization*, 34(1), 211-238.
- Yin, R. (2014). Case study research: Design and methods. (5th ed.) Thousand Oaks, CA: Sage.