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Small Farm Management of Information Communication Technology, E-Commerce, and Organization Performance

Shenique Carmichael
Walden University

Walden University

College of Management and Technology

This is to certify that the doctoral dissertation by

Shenique Carmichael

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Review Committee
Dr. Carol Wells, Committee Chairperson, Management Faculty
Dr. Donna Brown, Committee Member, Management Faculty
Dr. Barbara Turner, University Reviewer, Management Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

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MBA, Pfeiffer University, 2009

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Many small farm farmers in the United States are reluctant to use information communication technology (ICT) and e-commerce, yet little is known about their decision-making rationale. The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making, specifically, regarding use or non-use of e-commerce, in managing farm operations by using the Miles and Snow's typology of strategic management. The purposive sample consisted of 30 small farm farming operations in Kansas and Missouri with revenue less than $250,000 per annum. Data analysis was 3-tiered and involved use of horizontalization, thematic clustering, and synthesis. Using the Van Kaam method of data analysis, 4 themes emerged: (a) small farm farmers have a family-oriented farming experience with complex factors that lead to the reliance on fellow farmers for information and support; (b) small farm farmers rely on fellow farmers for advice and support as well as the use of established procedures in their farming operations; (c) while small farm farmers see the value in ICT in farming, many view it as either impractical or non-applicable for their own operations; and (d) small farm farmers recognized that ICT has a positive impact on farms productivity, income, and growth. However, some small farm farmers were reluctant to adopt ICT due to expenditure, location, and farm size concerns. Study findings also highlighted a few business models such as community-supported agriculture investment that small farm farmers use to enhance their daily farm operations. With insights from the study, small farm farmers in the United States may be able to improve their understanding of e-commerce applications, which could potentially lead to increased annual profits for these farmers, new customers and consistent product pricing for consumers.

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Dedication

I dedicate this dissertation to my mother, the late Leah Rachel Bodie, and my husband, Terry, L. Carmichael II, who were the motivating forces behind me pursuing this endeavor. I am extremely grateful for all the support and understanding from my kids, Destini and Isaiah, because I missed many of their activities. I love you all, and may God continue to bless you as you pursue your passion in life.

Acknowledgments

First, I would like to thank my Heavenly Father for allowing me to get to this point in my journey. He has provided the strength and persistence to remain focused and motivated to complete this journey. I would also like to thank Dr. Carol Wells, my committee chairperson, for not giving up on me. She provided the right level of leadership and guidance and pushed needed to complete the program. I also want to thank Dr. Donna Brown, my committee member, for her valuable insight, caring heart, and consistency throughout this journey. I could not have done any of this without their support.

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Chapter 1: Introduction to the Study

Introduction of the Study

Farming provides many advantages to small farm farmers who want to offer fresh, healthy products locally. Small and large farms tend to take different approaches in the use of e-commerce and other aspects of information and communication technology (ICT; Ellram & Cooper, 2014). The limited existing literature on the topic of technology management differences between small and large farms (Bournaris, Manos, Vlachopoulou, & Manthou, 2011; Carli, Canavari, & Grandi, 2014; Carpio, Isengildina-Massa, Lamie, & Zapata, 2013; Sheppard, Bittman, Swift, Beaulieu, & Sheppard, 2011; Schimmenti, Asciuto, Borsellino, & Galati, 2013) supports three conclusions. The first conclusion is that smaller farms are more likely to either not use a certain technology as part of their growth strategy, or use e-commerce/ICT to support management strategies of defense or reaction, rather than management strategies of prospecting or analyzing. Second, smaller farms are more likely to use e-commerce and ICT to perform multiple functions while larger farms tend to use specific technological tools for specific purposes. Third, larger farms are also more likely to use technology to obtain or support economies of scale.

These differences pertain to non-U.S. farming businesses. It is not clear whether these differences also pertain to U.S. agriculture businesses or whether other strategic, technological, and operational differences also exist between smaller and larger U.S. farms. The identification and exploration of such differences may provide smaller U.S.

farms with best practices and guidance on how to manage technology and improve results. Study findings may also be useful to technology providers in designing technology interventions and initiatives that meet the unique needs of small farm farmers.

The limited literature (Bournaris et al., 2011; Carli et al., 2014; Carpio et al., 2013; Sheppard et al., 2011; Schimmenti et al., 2013) covering e-commerce management for small and large farming environments provided three conclusions: (a) small farm farmers use e-commerce technology for less strategically ambitious and valuable reasons than do large farms farmers; (b) small farmers use e-commerce in a more general way, with one tool or a few tools deployed in contexts in which several more specific tools might be necessary; and (c) small farm farmers are less likely to use e-commerce to achieve economies of scale. These conclusions were drawn from limited empirical studies primarily focusing on farming businesses outside the United States (Bournaris et al., 2011; Schimmenti et al., 2013). It is not clear whether these three identified differences in usage of e-commerce between small farm farmers and large farm farmers are present in U.S. farming operations. Lastly, the existing quantitative studies on the differences in how and why small farm farmers use e-commerce have not yielded conclusive results (Carpio et al., 2013). Qualitative field research provided the basis for my investigation of small farm farmers decisions to use or not use of e-commerce. My intention was to fill in some of the gaps of the previous studies.

Through a transcendental phenomenological study, I explored U.S. small farm farmers' decision making through the eyes of small farm farmers located in Kansas and

Missouri. Chapter 1 discusses the background of the study, the problem statement, and the purpose of the study. The key definition, conceptual framework, and research questions were also discussed. Finally, I concluded with the assumptions, limitations, and the significance of the study.

Problem Statement

Based on my review of the literature, there is not enough research about small farm farmers' decisions to adopt ICT and e-commerce in the United States. Understanding the potential differences in the e-commerce management practices of small farm farmers and large farm farmers could help small farm farmers to identify best practices and potential problem areas in e-commerce management for their businesses. In reviewing literature, I found that there is a specific gap regarding understanding farmers' strategic use of ICT and e-commerce. There is limited literature that expounds upon small farm farmers rational for the use or non-use of e-commerce. There is literature that illustrates the rationale behind why some small farm farmers' may use e-commerce as a way of expanding their farm business. However, there still lacks the detail behind a small farm farmer might not use e-commerce.

Farming has provided a steady source of income for millions of Americans from the late 16th century to the present. Small farm farmers have dominated U.S. farming for most of the nation's history; as many as a fourth of all Americans have been farmers (Klein, 2011). According to Alston and Pardey (2014), recent studies reflect this to encompass a mere 3-5%. According to Woosegung and Klein (2011), small agricultural

production enterprises have been under immense economic pressures for many years (p. 359). The emergence and dominance of larger farming businesses accelerated during the latter half of the 20th century (Heinemann, Massaro, Coray, Agapito-Tenfen, & Wen, 2014). In managing their farming businesses, U.S. small farm farmers have realized reduced economic benefits as the profits of large farm entities have continued to grow (Klein, 2011). This reduction in economic benefits has resulted in a polarization of wealth, which has, in turn, eroded the position of smaller farmers within society and created greater social and economic inequality within the United States (Smith, 2010).

Woosegung and Klein's (2011) study consists mostly of a theoretical model discussion and a meta-review of literature; they did not use empirical means to demonstrate how actual small farms in the United States are achieving added efficiency with e-commerce. The adoption of e-commerce among small farm farmers in the United States has the potential to increase their competitive advantages by allowing these farmers to charge higher prices for their crops, find new markets, and enter buying consortia which lower the prices of farm supplies (Roe, Batte, & Diekmann, 2014). Small U.S. farms have lower rates of e-commerce adoption than do other small and medium enterprises (Briggeman & Whitacre, 2010). Greater competitiveness for small farms could represent a gain of hundreds of millions of dollars in efficiency and profit for the U.S. economy (Alston, & Pardey, 2014). The United States Department of Agriculture/National Agricultural Statistics Service (USDA/NASS) has not conducted any surveys soliciting data about the state of e-commerce adoption among small or large

American farms, although there is general, cross-study agreement that anywhere from a fifth to a half of US small farms are productive users of e-commerce (Briggeman & Whitacre, 2010; Dan & Qihong, 2014; Roe et al., 2014).

Purpose of the Study

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations through use of Miles and Snow's (Miles et al., 1978) typology of strategic management. Also, I sought to address the gap in the literature related to the use of e-commerce and small farm operations. This study may add to the existing literature by contributing understanding of farmers' decision making processes when it comes to e-commerce and managing their farm operations. I used a purposive sampling strategy to select 30 small farm farmers from the U.S. states of Kansas and Missouri. A face-to-face semistructured interview was conducted with each participant.

Conceptual Framework

Miles and Snow's typology (Miles et al., 1978) was the underlying concept for this study. The four strategies described by Miles and Snow can be used as a framework through which to model and understand small farm farmers management decision regarding the adoption or non-adoption of ICT and e-commerce as part of their farm businesses. The four types of entities that are characterized in the typology are Defenders, Responders, Analyzers, and Prospectors (Miles et al., 1978). The Defenders are

companies that pursue a fixed strategy and that take few, if any, risks in the marketplace; the goal of the Defender is merely to maintain its position (Miles et al., 1978). The Responders react to market developments by changing their strategies, but only in limited ways (Miles et al., 1978). The Analyzers are strategically adventurous; they expand into new markets and take risks but only in a manner that builds on their existing competencies (Miles et al., 1978). The most strategically creative companies are Prospectors; they launch into entirely new markets and take significant risks (Miles et al., 1978). The benefit of using these concepts is that they permit U.S. small farm farmers to view their business environment in different ways, which may influence them to adopt different management strategies and gain a competitive advantage over their competitors (Miles et al., 1978).

Technology adoption is one of the most complex topics in business literature, with many competing explanations and ideas. According to one view, people make technology adoption decisions in idealized free-market conditions posted by neoclassical economists (Bojnec & Latruffe, 2013). Individuals or those in management positions may be the key decision-makers regarding technology adoption (Bojnec & Latruffe, 2013). Technology adoption may also take place within larger social groups, including families and neighborhoods. Regard less of whether individuals or social groups make the decision to adopt to technology, there is a question as to the extent to which individuals are free from the influence of others when making adoption decisions. These decisions may represent a rational process of need articulation and utility maximization, or they

may be determined by social pressures, infrastructure, government coercion, and advertising. (Bojnec & Latruffe, 2013).

In summary, the gap in the literature points to a need for an analysis of e-commerce adoption behavior among U.S. small farm farmers. Researchers can use the conceptual framework of strategic management articulated by Miles and Snow for this analysis of e-commerce adoption behavior (Miles et al., 1978). A search of existing research between 2010 and 2015 indicates that this area of e-commerce adoption behavior has not been widely studied. An in-depth examination of participants' interview responses will provide a greater understanding of the various choices made by small farm farmers in managing e-commerce.

Definition of Terms

Analyzer: A company that seeks to find opportunities that are adjacent to existing competencies and to calibrate its strategy towards expanding into these areas (Miles, Snow, Meyer, & Coleman, 1978).

Behaviorism: A theoretical approach that represents decisions not as primarily the outcome of individual ratiocination, but rather as the extension of intrinsic and reflective drives reinforced by environmental influences known as stimuli. Behaviorism is thus one possible means of explaining aspects of the decision-making process that the theory of economic rationality cannot explain (Skinner, 1938).

Defender: A company that tries to protect its strategic position by applying an existing strategy with minimal or no change (Miles, Snow, Meyer, & Coleman, 1978).

Digital divide: A Digital divide is the gap between digital haves and have-nots emerging from to the unequal distribution of ICT resources (including hardware, software, infrastructure, and education) between rich and poor, urban and rural, and northern and southern hemispheres (James, 2003).

Diffusion of innovations theory: Diffusion of innovations theory is a theory that originated with Tarde (1903) but is most often associated with Rogers (2010). Diffusion of innovations is a theoretical framework to explain how and why technology spreads (e.g., from person to person or from location to location). This theory is a model to explain observed empirical patterns in the spread of technology (Caravella, 2011). In this way, the method is compatible with three broad explanations of the spread of technology: rationalism, social determinism, and behaviorism (Caravella, 2011).

E-commerce: An aspect of ICT, is the buying, selling, and marketing of goods and services online (Azadeh, 2009; Uematsu & Mishra, 2010). For this study, e-commerce is the use of marketplace technology on the World Wide Web to buy or sell farm goods, with particular emphasis on selling goods by small farm farmers. E-commerce involves some form of online checkout capability, and for farming, requires a business model that includes shipping and distribution capabilities.

Economies of scale: Advantages that emerge from the ability to produce more of a product at the same, or less, the cost required to produce smaller quantities of that product (Krugman & Wells, 2012).

Enablement: A factor (such as economic self-interest) that encourages an individual to adopt a technology (Cenfetelli, 2004)

Information and communication technology (ICT): All technologies for accessing, processing, and transmitting information. ICT includes hardware, software, and networks, as well as media designed to collect, store, process, transmit, and present information. This information can take the form of voice, data, text, or images (Kozma, 2014).

Infrastructure: The availability and robustness of Internet-supporting technology, including fiber optic cables and specially adapted telephone lines (Azadeh, 2009).

Inhibition: A factor that prevents an individual from adopting a technology (Cenfetelli, 2004).

Prospector: A company that is groundbreaking in its application of strategy to entirely new markets (Miles et al., 1978).

Rationalism: The assumption that all or most business decisions including farming technology adoption decisions are made because an agent believes that the decision will result in an increase in efficiency. Rationalism refers to the achievement of the desired end, such as profit, and the avoidance of a nondesired end, such as loss. Rationalism often applies to the behavior of agents.

Reactor: A company that haphazardly adopts a strategy based on whatever is happening in the marketplace (Miles et al., 1978).

Small farmer: Farmer with an income of $250,000 or less per year (USDA/NASS, 2011).

Two-factor theory: Two-factor theory is a theory developed by Herzberg (1993) according to which positive responses and negative responses are distinct from each other in the calculus of decision-making. The two-factor theory is the source of the terms enablement and inhibition.

United theory of acceptance and use of technology (UTAUT): A theory inspired by the general diffusion of innovations theory (Venkatesh et al., 2012). UTAUT is a method specifying that people adopt technology because of a mix of personal factors (such as anticipated usefulness) and social pressures (such as influence from bosses) (Caravella, 2011).

Assumptions, Limitations, Scope, and Delimitations

The scope of the study is delimited to differences in (a) strategic uses of e-commerce, (b) The role of e-commerce in economies of scale, and (c) the specificity of e-commerce utilization between small and large farms in the United States, specifically in the states of Kansas and Missouri. One assumption of the study is that respondents will be truthful in their completion of this study's instruments, and their responses will be free from bias. Another assumption is that the data provided by each respondent will be beneficial to the USAD and other farmers because of the diverse management perspectives and small farm experience. It is also assumed that respondents will provide an accurate assessment of the circumstances that relate to organization use or non-use of e-commerce. The researcher analyzed and reported on these assumptions in Chapter 4 of the study. One limitation of the study is that farmers might have blind spots about their

approach to e-commerce management and strategy and might, therefore, fail to provide rich data on the study topic. The lack of methodological triangulation is another study limitation, as only qualitative interviews will provide data for the study.

Research Questions

The overarching research question for this study is as follows: What are the lived experiences of farmers in Kansas and Missouri in making decisions in managing small farm operations?

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations as understood through the Miles and Snow typology of strategic management. Miles and Snow typology of strategic management provided the underpinning for the study. The semi-structured interview questions were general enough to allow farmers to contribute their narratives without feeling prompted to be overly accurate in their responses, as recommended in the literature on qualitative methodology (Denzin & Lincoln, 2011).

The semi-structured interview questions included:

Question 1: What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

Question 2: When confronted with change, how do you deal with difficult decisions?

Question 3: How do you feel about the use of technology in managing your farm?

Nature of the Study

The study used a qualitative method and transcendental phenomenological design to explore e-commerce to obtain insight into how and why small farm farmers in American use or do not use e-commerce to assist with managing farm operations. The transcendental phenomenological design of this proposed study is similar to the layout of a prior phenomenological study of e-commerce adoption experiences among dairy farmers (Bhargava, Ivanov, & Donnelly, 2015). Phenomenological studies typically obtain and analyze the experiences of individuals from their perspectives to understand an experience and identify themes that challenge assumptions about a situation or issue. Since this research study seeks to examine the e-commerce adoption practices of small farm farmers, phenomenology is a sound study design. This research design was not selected for ethnographic research because ethnographic research focuses on a particular cultural group, which is not part of the proposed research study. Also, grounded theory was considered for the survey design, but it was eliminated due to the emphasis on interacting with a large number of people. The purposive sample consisted of thirty small farm farming operations with revenue less than $250,000 per annum. The researcher sorted through willing participants, who do use e-commerce and those who do not, to arrive to the appropriate sample size of 15 in each category to adequately address the research questions. In phenomenological data analysis, data saturation typically occurs after interviews with approximately 25 participants (Bhargava, Ivanov, & Donnelly, 2015; Cilesiz, 2011; Englander, 2012).

Data collection consists of in-person interviews involving open-ended, semistructured questions. Questions were designed by a prior model (Cilesiz, 2011) used to examine aspects of the technology management experience. During the interview, the research allowed for unscripted questions to develop from the original open-ended questions as participants offer more details. The open-ended interviews provided a means of exploring additional areas for investigation. The purpose of the interview was to present the semistructured questions and to gather initial data. Member checking took place at the end of each interview to allow participants to verify and make changes to his or her responses.

The participants for this study included 30 small farm farmers from Kansas and Missouri. The purposive sample consisted of 30 small farm operations with revenue less than $250,000 per annum, 15 were those who use e-commerce and 15 of those who do not. This number of participants is optimal for a phenomenological study (Vagle, 2014). The point of data saturation, defined as the point at which further interviews are not yielding additional information (Vagle, 2014), will determine the exact number of participants. The chosen sampling strategy is purposive. The Chamber of Commerce will provide lists for participant recruitment.

Before commencing the data collection process, approval was obtained from the Institutional Review Board (IRB) of Walden University. The researcher contacted potential participants using e-mails and postal letters, sent to every farmer on the contact

lists. Participants consented to be recorded by me record using the Walden University *informed consent process*.

According to Englander (2012), a study's credibility improves as a function of the amount of time spent interviewing the subject(s). The researcher conducted, on average, a one hour interview at a mutually agreed upon location. Interviews were recorded where permission was obtained, and the data was manually transcribed. Member Checking occurred at the end of each interview to assess for completeness, and accuracy of the data transcribed.

Data analysis utilized the three-tiered technique of horizontalization, thematic clustering, and synthesis (Vagle, 2014). The researcher used hand coding, excel spreadsheets and NVivo™ (version 10.0) qualitative software to assist in the organization and coding of the data gathered.

Significance of the Study

It is important for American small farm farmers to understand the importance of operating their business using this widely used technology to advance their success. In agriculture, e-commerce connects sellers with buyers outside of the geographical vicinity or known the circle of customers (Whitacher, Gallardo, & Strover, 2014). E-commerce also connects local farmers with domestic or international buyers in this era of global agricultural logistics and free trade. Machfud and Kartiwi (2013) supposed that

e-commerce can moderate price fluctuations, both allowing purchasers to find new markets and enabling buyers and sellers to negotiate longer time contracts. All of these themes in the literature support the idea that economic rationalism remains a robust frame through which to understand farmers' e-commerce adoption decisions. By examining the contextual reasons for e-commerce management decisions not easily measured by quantitative research instruments, qualitative researchers can address a significant gap in literature.

Qualitative researchers can address a significant gap in the literature by examining strategies, structures, and the behavioral and deterministic social reasons for management decisions not easily measured by quantitative research instruments. Economic rationality and irrationality are pre-cursors of e-commerce management behavior from qualitative research results. Park, Mishra, & Wozniak (2014) quantitative measurement of the rational dimensions of e-commerce adoption and conclusions focused on cost-benefit-based aspects that are in contrast to this qualitative analysis study. These studies are relevant to their right but do not contribute to the phenomenological approach to technology adoption, nor the understanding of strategic management practices (Cilesiz, 2011). In particular, by showing sensitivity to other mechanisms for the diffusion of e-commerce innovation, the study will add to the current findings (Bojnec & Latruffe, 2013; Park et al., 2014), that perceived economic self-interest drives most e-commerce adoption on farms. In general, quantitative studies cannot provide the depth of exploration possible in a qualitative investigation of why

technology adopters manage e-commerce in particular ways. An in-depth study of how farmers strategically manage e-commerce if they have made the decision to adopt it is a means of obtaining deeper insight into the strategic importance and use of technology.

This research project addresses a gap in the literature that became visible when a search of existing literature from 2010 to the present indicated a lack of information centered on the topic of e-commerce and small farm operations. The findings of this study seek to clarify environmental and management aspects of the use of e-commerce by small farmers as well as the rationalism aspect about strategic management practices which has been largely understudied. In agriculture, e-commerce can readily be used to connect sellers with buyers outside of the geographical vicinity or known circle of customers (Briggeman & Whitacre, 2010). In an era of global agricultural logistics and free trade, e-commerce can also connect local farmers with domestic or international buyers. Informal online marketplaces, the cost of participation and barriers to entry for small farms are little because online marketplaces can provide numerous services for reduced prices (Hua, Morosan, & DeFranco, 2015). Similarly, individual e-commerce sites administered through individual farming concerns have the potential to build private spot markets, which are markets that sell particular crops to invited bidders for certain kinds of crops (Bhargava, Ivanov, & Donnelly, 2015). All of these themes in the literature support the idea that economic rationalism remains a robust frame through which to understand farmers' e-commerce management decisions, but there is room to examine additional frameworks.

Summary and Transition

American small farm farmers in their function of managing their farming business have realized reduced economic benefits as the profits of large farm entities continue to grow. This results in a polarization of wealth that in turn erodes the position of smaller farmers within society and creates greater social and economic inequality within the United States (Smith, 2010). Small farm farmers consequently need to explore means, including e-commerce, to become more competitive. Any study designed to examine how small farm farmers in American are currently managing e-commerce in comparison with larger farms has the potential to help small farmers to improve their understanding of the costs, benefits, and realities of e-commerce in the farming marketplace. For example, by seeing the case for or against certain kinds of e-commerce management strategy as specified by their peers, farmers can obtain a better and more relevant understanding of how they, too, can utilize e-commerce in more strategically and operationally appropriate ways.

The particular problem addressed in this study is that not enough is known about small farm farmers' decisions as to whether or not to adopt Information Communication Technology (ICT) along with e-commerce and their rationales for these decisions. Also, not enough is known about potential differences between e-commerce management practices on small and large farms; differences that could help to identify best practices as well as stumbling points for e-commerce management as carried out in smaller farm businesses. Because of the documented connection between e-commerce adoption and

greater profit and efficiency for small businesses, the absence of this information means that neither scholars nor policy-makers understand why so many small American farmers are failing to educate themselves of e-commerce, or to manage it in line with strategic best practices. Without such an understanding, e-commerce management and adoption among small American farmers cannot be effectively promoted.

This study is a qualitative, transcendental phenomenological investigation of decisions regarding the adoption or non-adoption of Information Communication Technology and e-commerce among small farmers in the United States. Miles and Snow's strategic management typology will be used as the theoretical framework for this study, serving as the source of inspiration for themes and topics within the interview protocol (Miles et al., 1978). This typology is used to examine the aggressiveness of strategies within four specific categories: Prospector, Defender, Analyzer, and Reactor. The Prospector is aggressive, seeking new markets using innovative research and development. Regarding farming practice, a Prospector is an early adopter of innovations and technologies, making this farmer likely to use e-commerce and expand the farming business reach. The Defender is one who primarily maintains the status quo. While the Defender seeks new clients, it is not with aggression. The Defender is likely to be resistant to e-commerce and other technologies, but may come around to using e-commerce due to its benefits to the farming practice. The Analyzer takes risks, but not as aggressively as the Prospector, resulting in fewer mistakes. The Analyzer is cautious, but not stagnant. The Analyzer is a slow adopter of e-commerce and other technologies.

Finally, the reactor does not have an active strategy. Instead, actions taken are the direct result of what has already happened. The Reactor may adopt e-commerce, but only when it is impossible to avoid it.

The Prospector strategy is the most aggressive of the four categories. Within this group, an organization takes concrete action and implements plans to move into new markets, develop and implement new products and services, and benefit from new opportunities (Miles et al., 1978). The Defender strategy occurs when an organization makes a decision to pursue markets, but not aggressively. Some of the actions taken by Prospectors and Defenders overlap. However, the goal of a Defender is to protect the *status quo* in the midst of exterior changes rather than seeking out new opportunities.

The Analyzer strategy falls between the aggressiveness of the prospector and the meekness of the Defender (Miles et al., 1978). The Analyzer does take some risks, but because they are more cautious than Prospectors, they do not make as many mistakes. Conversely, the analyzer does seek stability, but not to the same extent that Defenders do. Finally, the Reactor strategy has no active plan. Instead, the actions taken by the reactor are a direct result of events or situations that have occurred.

The purposive sample will consist of 30 small farm farming operations with revenue less than $250,000 per annum. The researcher sorted through those who were willing to participate, who do use e-commerce and those who do not, to arrive at the appropriate sample size of 15 in each category. Chapter 2 includes the literature review.

The literature review consists of two general parts, an overview of theory and an overview of previous e-commerce studies about farmers.

Chapter 2: Literature Review

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations through use of the Miles and Snow (Miles et al., 1978) typology of strategic management. In reviewing literature on my study topic, I found that there is a paucity of research about small farm farmers' decisions to adopt ICT and e-commerce in the United States. Understanding the potential differences between e-commerce management practices of small farm farmers and large farm farmers could help small farm farmers to identify best practices as well as potential issues for e-commerce management in small farm farmers' businesses. For many years, small farm farmers have faced economic pressures in seeking to thrive in their competitive industry (Klein, 2011). Many families depend on small farms to produce good quality product at a reasonable rate. It is important that small farm farmers understand the benefit they provide to the community and the surrounding areas.

Literature Search Strategy

The literature review consists of two parts. The first part contains an overview of theory. The second part contains an overview of previous e-commerce studies about farmers. My literature search strategy was twofold. First, I designed the literature search to encompass seminal works in the field of management such as Sollosy (2013) and Rogers (2010). This was easily accomplished, since the reputation of original works is readily apparent in the literature. Second, I searched a number of academic databases, including ProQuest, JSTOR, Science Direct, and Academic Search Direct, for the

following keywords: *farming AND e-commerce*, *farming e-commerce*, *e-commerce for farms*, *ICT on farms*, *diffusion of innovations AND farms*, *strategic management AND farms*, *"Miles and Snow," and e-commerce management AND farms*. Cumulatively, these searches led to the identification of over 300 resources that formed the foundation of the literature review.

The purpose of the literature review is to examine current research as it relates to the research study. The aim is to identify gaps in current literature that can be addressed through this research study in order to build on existing research and provide a deeper understanding of the issue. I have given a greater emphasis to a discussion of technology and technology management because empirical research appears to be limited, based on my review of the literature, on e-commerce strategy and management differences between small and large farms. The available empirical studies on the differences in e-commerce management and strategy on small farm farmers and large farm farmers in the United States are reviewed in their own section. In this section, I include discussion of Miles and Snow's (1978) theory of strategy, the concept of economies of scale, and the idea of e-commerce specificity (Miles et al., 1978).

Information Communication Technology and E-Commerce

E-marketplaces began to gain traction in the 1990s. In some cases, these e-marketplaces were extensions of real-world marketplaces, such as commodity marketplaces or exchanges (Rainer, Prince, & Cegielski, 2013). In other cases,

e-marketplaces were created by Internet entrepreneurs who realized they could offer suppliers greater reach and provide buyers the convenience of purchasing items from a single location (Rainer, Prince, & Cegielski, 2013). For a few reasons, agricultural marketplaces can be superior alternatives for small farmers. By selling as many of their crops as possible to a single buyer, who then deals the crops to other purchasers, the smaller farmer avoids having to engage in direct marketing to individual customers or worrying about discovery (Uematsu & Mishra, 2010). The potential drawback of this situation is that the marketplace can exercise advantage over the distinct farmer, for example by claiming a significant percentage of profits from market sales.

Some researchers have conducted quantitative studies on the topic of ICT adoption in farming contexts (Uematsu & Mishra, 2010). There have also been qualitative studies on the phenomenology of technology adoption in Indonesia (Machfud & Kartiwi, 2013) and India (Chanda, 2007). ICT was initially intimidating to small farm farmers in the southern hemisphere (Machfud & Kartiwi, 2013); however, many farmers became more at ease with the technology because of government incentives in the form of education and funded ICT purchases (Machfud & Kartiwi, 2013). Entrepreneurial opportunities afforded by ICT helped small agribusiness owners in Indonesia overcome initial ICT problems and skepticism (Machfud & Kartiwi, 2013). The Australian government developed an exploration program for the installation of their telecommunications infrastructure across the country (Wilde, Swatman, & Castleman, 2000). One of the primary regions implemented in the action plan in Australia was

Warrnambool, which has approximately 45,500 square kilometers of farmland (Wilde, Swatman, & Castleman, 2000). Through this effort at connectivity, rural regions of Australia had digital connections with the rest of Australia as well as other parts of the world. For farmers, this meant increased opportunities for business through e-commerce strategies.

Efforts by governments or organizations to help farmers through implementing technologies and access will not be successful unless the implementation includes those it is meant to help. Cecchini and Raina (2002) examined the application of a wired community to benefit the community. The authors identified four primary strategies for successful implementation. The community should conduct a comprehensive needs assessment to determine the needs of the community, in order for the application to address their needs (Cecchini & Raina, 2002). The process should include continuous involvement and feedback from the community (Cecchini & Raina, 2002). The program should pay particular attention to the needs of women and those of lower socioeconomic status (Cecchini & Raina, 2002). Finally, these measures are most effective when implemented from a grassroots perspective (Cecchini & Raina, 2002).

These types of actions can help combat barriers to implementation of e-commerce. Warren (2004) explained that technological factors can present an obstacle to the implementation of e-commerce. Warren mentioned that one of the reasons for low Internet connectivity is the lack of suitable on-farm hardware. He goes on to rationalize that even in relatively advanced countries such as the United States and the United

Kingdom a significant proportion of farms still do not have PCs, and, in many of the others, the computers are old and too slow to allow efficient use (Warren, 2004).

While connectivity and Internet availability have increased since 2004, there are still many rural areas globally with limited connectivity. The problem with limited connectivity is that it prevents farmers from implementing e-commerce successfully (Warren, 2004). That is, without reliable technology and connectivity, e-commerce cannot become an integral part of a farmer's business strategy. According to Warren (2004), Farmers must be able to use technologies reliably. Also, as technologies advance and change, farmers must continue upgrading their hardware and software to accommodate those changes. Implementing e-commerce is not as simple as logging on to a website for many farmers, even with increased Internet connectivity.

Along similar lines, Warren (2002) examined the digital disparity in agricultural management among U.K. farmers. The problem with this disparity is that it has created a divide within the farming industry, with those who have access to, and use of a, technology having an advantage over others (Warren, 2002). This brings up an interesting point within the context of ICT adoption. That is, if farmers make an active choice against the adoption of e-commerce strategies thereby separating themselves from the farmers who do adopt e-commerce strategies, do they actively place themselves in a disadvantaged position in the agricultural industry? Also, is this a decision made with knowledge of the divide that exists in the farming sector?

Although quantitative researchers have expanded an understanding about small farmers, the use of purely quantitative approaches to farming e-commerce has some limitations. Rogers's (2010) diffusion of innovations theory and Herzberg's (1993) two-factor theory provide a context for a qualitative investigation of adoption technology experiences among small U.S. farmers and overcome some of the limitations of quantitative research as noted by Cummins and Weiss (2012).

Rogers's (2010) diffusion of innovations theory encapsulates the how and why new ideas and technology spread. It describes the benefits for small farmers to explore using technology to expand their market. Rogers argues that there are four elements that influence the spread of ideas: time, communication channels, innovation itself and social systems. He goes on to explain that companies that are innovators tend to take more risks, they have high financial liquidity and connect well with other innovators. He mentions that even though taking risk can lead to higher technology adoption, the disadvantage of taking such high risks leads to higher failure rates. The advantage for small farm farmers understanding Roger's diffusion process is that it allows the owners and managers of these farms to foresee the success or failure of their new products, and it helps them make healthier decisions for managing the operations of their farms.

Herzberg's (1993) two-factory theory also known as the motivational-hygiene theory describes two factors in the workplace that influence job satisfaction. Herzberg's findings have shown practical effects on the way small farm farmers think through how and why they manage their farm operations the way they do. Herzberg's (1993) research

shows that some small farm farmers are not satisfied with not having the ability to expand into new markets, nor are they satisfied with working in an unpleasant work environment on a daily basis. They prefer having the options to explore larger markets, increase productivity and create efficiencies within the workplace.

E-commerce in agriculture can connect sellers with buyers outside of the geographical vicinity or known the circle of customers (Whitacre et al., 2014). E-commerce can also connect local farmers with domestic or international buyers in this era of global agricultural logistics and free trade. Informal online marketplaces, costs of participation and barriers to entry for small farms are little because online marketplaces can provide numerous services for reduced prices (Whitacre et al., 2014). Even when farmers operate in remote locations, such as rural Australia, the implementation of information technology, telecommunications, and e-commerce has a significant impact on the connectivity of farmers with their communities and the rest of the world (Wilde, Swatman, & Castleman, 2000). Similarly, individual e-commerce sites administered through individual farming concerns have the potential to build private spot markets, which are markets that sell particular crops to invited bidders for certain kinds of crops (Whitacre et al., 2014). According to Machfud and Kartiwi (2013), e-commerce can moderate price fluctuations by allowing buyers to find new markets and enabling buyers and sellers to negotiate longer time contracts. All of these themes in the literature support the idea that economic rationalism remains a robust frame through which to understand farmers' e-commerce adoption decisions.

Economic logic attempts to separate moral decision-making from a business decision. Specifically, economic philosophy focuses on "the bottom line" of matter to make a decision about a business or organization. Within the context of small farm farming, this is a logical concept, particularly when including the competition from large-scale farming operations. There may be sentimental or social reasons individuals are farmers, but for the farming to be sustainable as a business, they must treat the farm as a business first. Therefore, when making decisions, such as in e-commerce adoption, farmers must justify the decision of adoption within the parameters of the firm operations. That is, will this investment in e-commerce strategies yield a beneficial return?

There is another component to economic rationalism that can apply to this phenomenon, as well. Economic logic is also rooted in concepts such as operating in a free market, deregulation, and an emphasis on privatization, among other things. These ideas suggest a high propensity toward autonomy. However, the use of e-commerce often carries an element of regulation with it, so to remain autonomous, small farm farmers may want to avoid implementing e-commerce strategies, instead of continuing to rely on traditional framing strategies that have served them well over the years.

On the other hand, it is precisely these same concepts that may contribute to some small farm farmers' decisions to adopt e-commerce strategies. Computer software in recent years has advanced by governmental and private industry in aiding small farm farmers' operations in their decision making (Higgins & Kitto, 2004). In other words, the

implementation of technologies, including e-commerce, can contribute to greater independence. Since e-commerce allows farmers greater connection with consumers and vendors, farmers can operate independently more efficiently.

Contrarily, an examination of the use of e-commerce by small farm farmers reflected that e-commerce penetration on these farms was rare because farmers were busy or intimidated (Machfud & Kartiwi, 2013). This study was an important start, but there has been no follow-up or nationwide studies to examine the use of e-commerce on small farm farmers. Moreover, Machfud and Kartiwi's (2013) results demonstrated that farmers could have irrational reasons such as intimidation for refusing to adopt e-commerce, which in turn indicates that rationalistic and quantitative inquiry is not sufficient to examine some farmers' e-commerce decision strategies.

Qualitative studies outside the United States have concluded technology adoption has been intimidating for small farm farmers (Chanda, 2007). Farmers have overcome e-commerce implementation challenges and obstacles from ICT incentives and peer and government agencies. Age and income are more predictive of adoption than are education or ethnicity; and the state of ICT infrastructure available to a farmer may temper adoption experiences (Uematsu & Mishra, 2010). Thus, the literature contains evidence that e-commerce adoption among farmers can take place for a mix of rational, social deterministic, and behavioral reasons. For example, Aleke, Ojiako, and Wainwright (2011) examine social augmented parameters and their impact on the decision to adopt ICT by small farm farmers in Southern Nigeria. The researchers conclude that the

successful implementation of ICT by this demographic requires a balance between the technological and social factors that guide farmers' decisions. The technical rationale focuses on the business side of farming, which falls under rationalism. However, the social factors are also significant, which addresses social determinism and behaviorism.

From a rational point of view, farmers adopt e-commerce strategies to benefit the business aspect of farming. They can achieve greater reach and make business connections outside of their immediate communities. In some cases, adopting e-commerce strategies comes with economic incentives that benefit the farm and its business. Rational reasoning in the adoption of e-commerce is rooted in the business, which requires rationalism to be successful. While this approach can be beneficial because it focuses on the business component of farming, it can also be problematic because it does not consider social factors. While farming is a business, the business is inexorable from the social factors.

Social determinism is a theory asserting that social constructs and interactions alone guide behavior rationale. Literature indicates that farmers, particularly on small farms, use social reasons for making decisions. Therefore, it is logical to conclude that social determinism plays a role in their decision-making processes. Social determinism is beneficial for decision because it includes social constructs into the decision process. However, because it is limited to the experiences of the individual making the decisions, social determinism can create a paradox when used to make a decision about new technologies. After all, if the farmer has never used e-commerce, knows little about it,

and then uses social determinism to decide against its use, the farmer may be overlooking a vital business component because of limited social experiences.

There are some reasons small farmers and other small businesses may make the decision to avoid e-commerce and technology adoption. Small farm farmers make decisions under the theory of behaviorism, which can help point to why farmers may not adopt e-commerce or technology within their operations. Behaviorism holds the position that all behavior and decisions are the results of conditioning, which occurs when the individual interacts with his or her environment. This applies to small farm farming decision-making in that farmers learn what behaviors are and are not effective based on their experiences in farming. Behaviorism refers to the way farmers learned about farming. For example, if a farmer learned his trade from his father, it is likely that his father's influences conditioned him to react a certain way in a given circumstance. This approach can be valuable because it may build on knowledge from the past. It can also be detrimental in that farmers may not be open to new ideas and strategies.

In this capacity, the theory of reasoned action may point to reasons that small farm farmers make the decision to avoid e-commerce and technology adoption (Grandón, Nasco, & Mykytyn, 2011). According to Madden, Ellen, and Ajzen (1992), "The theory of reasoned action posits that behavioral intentions, which are the immediate antecedents to behavior, are a function of salient information or beliefs about the likelihood that performing a particular behavior will lead to a specific outcome" (p. 3). The behavioral beliefs are formed based on the underlying influence of the individual's perceptions of

the results of performing the behavior (Madden et al., 1992). An examination of the theory of reasoned action among small business owners in Chile showed it to be a valid theory for an explanation of the adoption of e-commerce among the population group (Grandón et al., 2011). That is, if small farm farmers do not think the adoption of e-commerce would benefit their operations or that they do not have the skills to maintain e-commerce and the use of technology, they may be less likely to adopt these tools as part of their business strategies.

Another factor in e-commerce adoption is the overall strategy of the small farm farmers. It is in this capacity that the Miles and Snow typology will be applied to decision-making for small farm farmers. Typically, small- and medium-sized business owners, such as small farm farmers, employ a little growth strategy (Blackmore & Nesbitt, 2013). Under the Miles and Snow typology, this places them as reactors or analyzers, which are not dynamic models of business strategy, and leads to a minimal emphasis on adopting new e-commerce or technologies (Miles et al., 1978). Since these farmers are not trying to grow their farming operations, there is a reduced need to take risks, such as adopting new technologies or utilizing e-commerce.

As technology integrates more fully into society, it will be harder for farmers to avoid the use of e-commerce and information technology in farm operations. Conducting business on-line will become standard practice in addition to performing supply chain management and quality assurance in managing daily operations (Kingwell, 2002). Typically, technology use makes processes and business more efficient. The integration

of technology has significant benefits, but it also creates an environment in which individuals and organizations cannot effectively operate a business without information technology. As technology is developing and society changes, this increasingly includes e-commerce. As a result, it may be increasingly difficult for small farm farmers to operate efficiently without incorporating e-commerce strategies into their business operations.

Theoretical Overview: Rationalism and Diffusion of Innovations

The theory of incentives is a general theory of why e-commerce might work and can be an extension of neoclassical economic theory rooted in individualism and self-interest. In attempting to explain why farmers might adopt e-commerce, Warren (2004) reported that comprised predominantly of micro-businesses 98 percent have fewer than ten labor units with a high degree of spatial dispersion, it would seem that farming is an obvious potential beneficiary of the Internet as a medium for knowledge transfer and commerce. At the most basic, the swift transmission of information in electronic form has attractions in an industry that is highly dependent on external input, ranging from location-specific weather (and crop disease) forecasts through livestock movement regulations to current market prices. Looking beyond this to e-commerce gives the small farm business the opportunity to gain entrance to a global economy, and an opportunity to reduce input expenses by cutting transaction costs and by bypassing zonal supply monopolies. (p. 373).This is a classical rationalist description of why e-commerce might be useful to farmers and fits into the general theory of economic incentives. The theory of

economic incentives is at least as old as Smith (2010) and has been developed to a much greater extent by recent neoclassical economic theory.

Adam Smith spoke about "methodological individualism" in how it affects the market phenomena specific to individual decision making (Kirzner, 1976). Connecting the needs of buyer and seller and having choices in whom is chosen connecting otherwise unconnected individuals (Ingham, 2008). Smith (2010) argued that the autonomous individual and his or her interactions with independent individuals, in a system that guaranteed fairness by both the forces of self-interest and government regulation, was the foundation of the market. Such individuals, according to Mises (1963), tend to be engaged in calculations about what will yield the greatest benefit to themselves, and arrange their actions accordingly. Free market price typically set by the demand of goods by consumers establishes a monetary calculation based on that need and what is available depicting a true society of free enterprise (Mises, 1963). In an incentive economy, someone who does the work to obtain a piece of information, prepare a good or service for sale, or otherwise engage in market activity is reasonably assured that his or her actions will pay off in the manner described by Ingham (2008), Kirzner (1976), and Mises (1963). People act economically because they think they will benefit and can help build the community. When they do not believe that they will help, (e.g., in a Communist economy), people cease to act economically, and there is little or no entrepreneurialism. They also cease to develop economic talents, as they are reasonably sure that they will never be compensated for such talents.

All of these points apply not only to the economy in general but e-commerce in particular. E-commerce can make money for individuals, corporations, and governments but only in a market setting. Within the context of a free and fair agriculture market, crops can be bought and sold, and there is incentive for people to engage in e-commerce related activities (ranging from investment in infrastructure to the development of individual computer skills) because there is a reasonable certainty that such activity will benefit those who engage in it.

An appropriate way to begin the empirical discussion of small farmers' management of e-commerce, and grounding the discussion in the rationalist theory of economic incentives, is via the theoretical framework of Bojnec and Latruffe (2008), which created an important model of farm business efficiency. In particular, Bojnec and Latruffe (2008) argued that there were multiple kinds of farm efficiency taken into account: (a) technical efficiency, (b) scale efficiency, and (c) allocative efficiency, and (d) economic efficiency.

These four categories of efficiency Bojnec and Latruffe (2008) offered a more precise way in which to think about the rational economic incentives that e-commerce can deliver to small farmers. Specifically, the following specific questions can be asked about e-commerce as it might or might not benefit them: (a) Does e-commerce allow farms to increase their output without increasing their input? (b) Does e-commerce allow farms to keep their production constant while reducing input? (c) Does e-commerce lower the price of inputs for farms? (d) Based on the answers to the preceding questions,

can e-commerce reduce production costs and increase revenue for farmers? The answers to these questions determine the economic incentive of e-commerce vis-à-vis farmers.

The four components of efficiency according to Bojnec and Latruffe (2008) are technical; scale; allocative; and economic. Technical efficiency refers to the performance of farms based on production quantity compared to the inputs. Technical efficiency can be measured using two frameworks: input- and output-oriented. In the input-oriented framework, data reduction can be applied without reducing output. In the output-oriented framework, technical efficiency provides information about the potential production increase that can be implemented without increasing input usage. Scale efficiency refers to the technical ability that enables practice management evaluation. Scale efficiency does not take size into consideration. Allocative efficiency addresses the respective prices of inputs. Economic efficiency is the product of allocative and technical efficiency, giving the overall effectiveness of a business. It can be viewed as cost efficiency and revenue efficiency.

There is more than one kind of theory that predicts rational economic behavior. The kind of approach favored by Bojnec and Latruffe (2008) is neoclassical economic decision theory, which originated with Smith (2010) and has been the backbone of economic thought over the past two centuries. In this approach, the need to maximize efficiency (particularly in the four areas of competence identified by Bojnec & Latruffe, 2008) and minimize risk guides businesses. This theory, however, makes some assumptions that are not universally accepted, and that delimit the theory in meaningful

ways. Bojnec and Latruffe's (2008) work illustrates some of these limitations. Bojnec and Latruffe assumed that farmers (a) had insight into the causal logic of their decisions and that (b) this causal logic is also rational. If Bojnec and Latruffe are right, most farmers will frame their economic decisions as causal if-then propositions: *If I sell my crop through e-commerce, I will obtain a greater profit than if I drove my crop to an outdoor market and sold it there.* It is possible that, in some cases, farmers will not model their decisions in causal logic. A farmer might make a decision without even considering it casually. Behavioral theories suggest that humans often imitate the behavior of others whom they trust or admire without even thinking about the behavior. Thus, a particular farmer might decide to sell a crop using e-commerce solely because all of the neighboring farms are also using e-commerce. In a case like this, it would be improper to describe the farmer's behavior as following Bojnec and Latruffe's causal model; the farmer is not thinking about efficiency and is instead acting out of a pure socio-behavioral instinct or pressure.

The literature is heavily biased toward the kind of model discussed by Bojnec and Latruffe (2008). Most researchers assume that farmers choose (or reject) e-commerce as the result of a causal, rational decision-making process (as borne out by the extensive meta-reviews of literature in Bojnec & Latruffe as well as in Uematsu & Mishra, 2010). By comparison, there is much less work on how and why farmers make e-commerce decisions just because they are imitating others or because their behaviors are heavily determined by some form of outside pressure, such as that of government policy or

relentless ICT marketing. If it were believable that neoclassical economic theory satisfactorily covered the decision-making processes of all farmers in a reliably nomothetic way, then there would no need to look to behaviorism and social determinism as additional theoretical frames; however, as Bojnec and Latruffe's work demonstrated, a fifth of all farmers engaged in economic behavior that neoclassical economists do not consider rational. If only a neoclassical frame is used, then the actions of this 20% will be unintelligible or anomalous to researchers.

Relation of Strategic and Management Theory to Farming E-Commerce

There are four types of general strategic orientations: Defense, Reaction, Prospecting, and Analysis (Miles et al., 1978). A company that chooses defense tries to protect its position by applying the company's initially successful strategy. A Defender, who seeks to maintain the status quo, employs a rational defense of a strong economic niche. The Defender finds innovation to be unnecessary in the context of economic rationalism. In the information cultures theory, the Defender has an unimaginative desire to remain within an established niche. A Reactor haphazardly adopts a plan based on whatever is happening in the marketplace. Within the context of economic rationalism, the Reactor purposely refuses to take risks and innovate because of economic threats. According to the information cultures context, the Reactor accidentally refuses to take risks and imitates others who are also reactors. An Analyzer seeks to find opportunities that are adjacent to existing competencies and to calibrate its policy towards expanding into these areas. An Analyzer finds adjacent markets under economic rationalism, but in

the information cultures theory, the Analyzer stumbles upon new markets. Finally, a Prospector is groundbreaking in its application of strategy to entirely new markets. Under economic rationalism, Prospectors seek new markets for purposive exploitation. However, the information cultures theory does not apply. Based on the preceding discussion of farmers and e-commerce, the following connections can be made.

While there are numerous empirical studies of e-commerce management on farms, there is a gap in the literature on how farms apply specific strategic focuses. One of the conclusions of the literature review is that there is a divergence between two motives for using and managing e-commerce. Economic rationalism and various non-rational reasons are under the heading of information cultures (whether borrowed from other farmers or imposed by regulatory authorities). There are distinct differences in how each of Miles et al. (1978) strategic focus areas can be applied to each type of motivation. It is possible that e-commerce management differences between larger and small farms can be understood as part of this framework, which could cast last on how and why small farms are not obtaining the full value of e-commerce. The description and defense of a method of investigating these differences are included in Chapter 3.

The empirical literature (Bournaris et al., 2011; Carli et al., 2014; Carpio et al., 2013; Sheppard et al., 2011; Schimmenti et al., 2013) on e-commerce strategy and management in farms suggests that, in small farms, e-commerce is used primarily to defend or react, whereas, to a great farms, e-commerce is used to prospect and analyze. For example, large farms utilize e-commerce to identify new markets, new products, and

new marketing strategies, thus supporting various forms of innovation. On the other hand, in smaller farms, e-commerce functions more as an extension of the existing business plan. Schimmenti et al. (2013) related that, in Italy, fruit and vegetable producers that had more revenue were also more likely to use e-commerce to locate spot selling opportunities abroad. Carpio et al. (2013) found that mid-sized and large farms in a variety of countries were more likely to use e-commerce to identify new markets abroad as well as to find new suppliers for themselves. Larger farms were thus more likely to use e-commerce in support of strategic innovation as expressed through what Miles and Snow have described as prospecting and analyzing (Sollosy, 2013).On the other hand, small farms are more likely than big farms to use e-commerce to react to market developments or to defend themselves from the competitive inroads made by other holdings.

Another important point in the literature is that vast and small farms have different roles for e-commerce as supporters of economies of scale. Sheppard et al.'s (2011) study of small and large farms in Canada reached a conclusion that, for large farms, business software was utilized to keep the costs of production down, for example by optimizing the use of productive resources. On the other hand, Sheppard et al. found that small Canadian farms used technology mainly for e-commerce, not as much to support operational efficiency. This difference illustrates one potential reason that larger farms can get more out of e-business and e-commerce software than small companies are.

One of the points made by both Sheppard et al. (2011) and Schimmenti et al. (2013) was that large farms use e-commerce and ICT for specific purposes, for example, by using accounting software for accounting, operational software for production planning, and so forth. On the other hand, in these studies, small farms attempt to utilize single e-business or e-commerce products for multiple purposes. One possible explanation of this strategy is that small farms have less money to spend on different, dedicated software products for various business functions, but some of the products discussed in Sheppard et al. and Schimmenti et al.'s works were open-source and thus free. Thus, more work is needed to understand the roots of technology adoption as well as technology utilization decisions on smaller farms.

Review of Rationalist Studies on E-Commerce in Farms

Supply chain efficiency is one of the many components of the Bojnec and Latruffe (2008) model of farm business efficiency; however, it has received detailed attention from some researchers as being the key to performance improvement among small farms. For years now small farm farmers' have been under pressure to compete to produce quantity at an economical price (Woosegung & Klein, 2011). Woosegung and Klein suggested that one solution to these e-commerce demands for small farms to make their supply chains more efficient using e-commerce technology is to (a) sell directly to consumers and (b) generate small aggregate farm produce sales in the form of multi-farm cooperatives. The work of Woosegung and Klein consisted mostly of a theoretical model and a meta-review of literature and did not use empirical means to demonstrate how

actual small farms in America are achieving added efficiency with e-commerce. These kinds of theoretical studies of agricultural e-commerce thus stand in need of empirical confirmation. One empirical study of e-commerce on smaller American farms was contributed by Amponsah's (1995) now-dated work on North Carolina farmers, based on an even earlier (dating to 1991) survey. Amponsah discovered that, in North Carolina, computer usage was less prevalent among smaller farmers than among larger farming concerns and that, among smaller farmers, computer usage was higher among farmers that are more educated. Amponsah's work is too dated to be of direct empirical value in evaluating the e-commerce usage of contemporary small American farms, but it is helpful in identifying early trends in computer usage among this population. Specifically, Amponsah's results can serve as a benchmark against which to evaluate more recent trends in ICT use among small American farmers (e.g., to determine whether educational attainment still plays a significant role in predicting ICT adoption).

Briggeman and Whitacre (2010) conducted a more recent survey of small American farmers' Internet use that is more directly relevant to the current study. In particular, Briggeman and Whitacre were interested in determining the reasons for use and non-use of the Internet; within the framework of this research topic, they made some exciting discoveries. In the beginning, there was wide adoption of both the Internet in general and e-commerce, in particular, thus showing that small farmers had made considerable strides in ICT adoption from the early 1990s (if the North Carolina results of Amponsah (1995) apply to the United States). The concept of broad adoption requires

further operationalization; to this end, Briggeman and Whitacre compared small American farmers' Internet and e-commerce adoption with adoption levels in a sample of non-agricultural small and medium-sized enterprises (SMEs). The result was that ICT and e-commerce adoption between SME farmers and SMES, in general, were found to be statistically identical. Some differences were also found between farms on the lower and higher ends of the SME scale. The smallest farms tended to have lower levels of website ownership than larger farms, suggesting that smaller farms are not taking the lead in selling their crops via their websites.

More recently, McFarlane, Chembezi, and Befecadu (2003) examine internet adoption and e-commerce strategies by agribusiness firms in Alabama. While this study deals with agribusiness companies rather than farmers, the conclusions, the researchers draw from the study apply to gain insight into the rationale behind farmers' adoption or non-adoption of e-commerce. Privacy continues to be a concern (15 percent) and farmers who are still are unwilling (24 percent) to conduct business over the internet serve as barriers for full web-based adoption (McFarlane, Chembezi, & Befecadu, 2003).

Unfortunately, this perception only serves to feed into the perception. That is since agribusiness firms believe that farmers are reluctant to purchase online, they do not market to farmers. Since agribusiness companies do not sell to farmers, they struggle to fill their product needs online, which then leads to the perception that they do not want to purchase online.

Briggeman and Whitacre's (2010) study has some significant limitations. In the beginning, it was delimited to small farmers in Hawaii, who might be comparable to small farmers on the American mainland. Additionally, Briggeman and Whitacre employed only three free variables farm size, crop type, and CEO education as predictors of variation in the dependent variable of ICT adoption. It is likely that many other factors can serve to determine ICT adoption among small farmers. In fact, using linear regression, Briggeman and Whitacre found that neither crop type nor CEO education was significant predictors of ICT adoption ($p < .05$) and that the R^2 of farm size was under .50. In other words, farm size accounts for under 50% of the variation in ICT and e-commerce adoption among small American farmers in Hawaii, indicating that other factors need to take into account to explain how and why American farmers adopt ICT and e-commerce.

Another weakness in Briggeman and Whitacre's study was that the quantitative aspect of the survey examined very few independent variables (IVs) whereas the qualitative survey gathered much more IVs of interest that could have been incorporated into the quantitative model. For example, the latter found that many small Hawaiian farmers who had not adopted ICT or e-commerce believed that these two technologies were not likely to lead to economic benefits, but none of Briggeman and Whitacre's quantitative questions measured the relationship between e-commerce and economic profits. Briggeman and Whitacre's results are tantalizing, in this sense, as the qualitative survey suggested some reasons for small farmer adoption and non-adoption of ICT and

e-commerce that align with neoclassical economic theory, Two-Factor Theory, and UTAUT. None of these ideas, however, were statistically examined in the quantitative component of Briggeman and Whitacre's study; and, the qualitative comments were brief and did not offer rich insights into the motivations of small American farmers.

The purpose of this transcendental phenomenological study is to explore U.S. small farm farmers' decision making in managing farm operations as understood through the Miles and Snow typology of strategic management. An understanding of this phenomenon can help small farm American farmers more efficiently implement e-commerce measures to meet their needs, expectations, and overcome barriers to e-commerce use.

This research may be useful in raising awareness about e-commerce for small farm farmers. Literature suggests that a lack of knowledge about e-commerce strategies and their benefits in small farm farming contributes to non-adoption of e-commerce. This study may provide valuable information about behaviors and their rationale, with an objective look at the implications of those decisions. Small farm farmers may review the research to have a better understanding of the consequences of their decision-making in regards to adopting e-commerce strategies.

Carpio et al. (2013) conducted a study of MarketMaker that obtained more accurate insights than Briggeman and Whitacre (2010) regarding identifying independent variables that significantly predicted variation in the intention to use e-commerce as a buying tool for small farm farmers. Farmers continue to stay loyal to local merchants

when purchasing for their business. They do turn to the internet when a lower price can be obtained and for better quality (Briggeman and Whitacre, 2010). These results supported Bojnec and Latruffe's (2008) general conclusion that most economic behavior among farmers can be explained by neoclassical economics and the drive for efficiency. These actions seem to uphold the conclusions reached by both sets of researchers in that farmers are rational economic agents whose e-commerce adoption behavior can be understood through the lens of neoclassical economic theory.

The work of Briggeman and Whitacre (2010) was limited to small Hawaiian farmers, and the work of Carpio, Isengildina-Massa, Lamie, and Zapata (2013) examined MarketMaker, According to Roberts, Majewski, and Sulewski's (2013) findings, distance was the primary logistical factor driving the use of e-commerce for purchasing. Although Mishra et al. did not explore further e-commerce as a sales channel, it is worth trying to obtain greater insight into why farmers' intentions to use e-commerce to sell crops remain unpredictable and almost mysterious. One way to explain the data is through the following conceptual schema:

(1) E-commerce is adopted as a sales tool when farmers believe it is likely to profit them and (2) farmers' reasons for believing that e-commerce is a profitable sales tool are highly idiosyncratic and cannot be predicted through existing statistical models. Farmers' education, income, distance from primary markets, and age are simply bad predictors of whether farmers think e-commerce sales will benefit them. This insight is quite compelling, for two reasons. First, it fits the data. In three studies (Briggeman &

Whitacre, 2010; Mishra et al., 2009; Woosegung & Klein, 2011), researchers have struggled to find statistically significant predictors of farmers' intentions to use e-commerce to sell their crops. Second, it suggests farmers' judgments about the profitability of e-commerce as complicated circumstances form a sales channel, and that probably have to do with the specific cost-benefit analyses and economic assumptions of individual farmers. If so, then there is a unique role for qualitative studies to play in discovering what these circumstances and assumptions might be for individual farmers. One point to bear in mind, according to Ellram and Cooper (2014), is that the success of e-commerce as a sales channel is not necessarily about the success of individual farmers and their processes, but about an entire supply chain. For small farmers to believe that e-commerce will be a profitable sales channel for them, they also need to believe in the integrity of their sales execution, escrow, and logistics systems. Thus, the infrastructure of the e-commerce selling process requires close examination, as farmers' perception of this infrastructure might be helping to determine what they think about the profitability of e-commerce as a whole.

Many of the studies here were based on surveys, which compel respondents to frame their answers regarding the language chosen by the researcher. This approach has strengths and weaknesses; and, to understand them, it is necessary to distinguish between nomothetic methodologies (that have a goal of discovering laws and generalities) and idiographic methods (that have a purpose of uncovering specific and subjective facts not readily generalizable. Bojnec and Latruffe (2008) took a nomothetic approach to the

question of farms' business efficiency; by applying a statistical method, they hoped to model how all rational (that is, profit-maximizing, risk-minimizing) farmers run their businesses. Bojnec and Latruffe discovered that data from small farming operations in Slovenia was a good fit with the theory. Slovenian farmers were rational economic actors who took the steps necessary for cost efficiency and revenue efficiency while avoiding risky actions (such as investments in unproven technologies). The problem with such an approach is that, when data sets are large enough, pure nomothetic is unlikely. For example, Bojnec and Latruffe found that roughly a fifth of Slovenian farmers was not behaving reasonably based on the efficiency model. A nomothetic model cannot account for the actions of farmers whose behavior does not predict neoclassical economic models. Moreover, even when a nomothetic model proves to be useful in modeling economically rational behavior, it does not explain why or how farmers engage in the economically rational behavior. Why, for example, would one producer think that e-commerce is profitable while another farmer with a very similar business operation finds e-commerce to be unprofitable? Thus, while there is a role for nomothetic approaches in studying farmers' economic behavior (for an extensive discussion of them, see Uematsu & Mishra, 2010), there is also a role for idiographic researchers whose methodology is designed for small-scale inquiries that treat each farm as a world of its own.

Even though there is a significant distinction between these two kinds of research traditions, idiographic researchers can still benefit from the theoretical contributions of nomothetic researchers. Bojnec and Latruffe's (2008) four categories of efficiency are an

excellent template through which to examine how e-commerce operates within specific farms. With this model, it can be found that a particular farmer thinks that e-commerce confers allocative efficiency rather than technical efficiency, whereas another farmer obtains scale efficiency but not allocative efficiency from e-commerce. In this way, the theories and models of nomothetic research on farms can also be fruitful methodological lenses for the idiographic research, especially regarding breaking the idea of rationalism down into particular kinds of efficiency.

Most of the research on e-commerce (and, indeed, economic behavior) in farming businesses is ideographic in nature. Bojnec and Latruffe (2008) are among the very few researchers who tried to model and reach general conclusions about, farmers' behavior based on empirical data. Even statistically oriented researchers tend to avoid reaching generalizations and seeking to synthesize economic models from their data. One of the reasons that ideography is such an important tradition in the literature on e-commerce is that farms are so different from each other regarding size, geographical location, and products bought and sold. Because of the diversity in both the global and American farming sector, it is helpful to approach the research with an idiographic mindset: that is, to try to catalog the many observed differences between farms. On the other hand, it is also necessary to look at farming behavior through the theoretical lens of traditional economic theory, so that there is room to (a) acknowledge the unique circumstances of each farming business while also being able to (b) recognize that farmers, despite their

diversity, can be understood as economic actors who probably, but not always, behave in the ways that theory predicts.

E-Commerce and Information Culture, Including Regulation

Mair and Schoen (2007) wrote of e-commerce adoption as an extension of the so-called "social entrepreneurial business model" (p. 54). In this example, e-commerce adoption takes place within the context of an information culture that is defined and promoted by a combination of private organizations and public entities and that comes together to create a social vision within which e-commerce can prosper. This can be particularly seen in smaller and poorer farms, whether in the developing world or particularly poor regions of developed countries. In India, this information culture is typically defined by the central government, which disseminates its vision to provincial and local governments (Ashraf, Grundfeld, & Quazi, 2015). According to Ashraf et al.'s (2015) account of the spread of e-commerce, the process is top-down in nature. The government begins with a vision of how it would like rural farmers to use ICT and local governments and private organizations working in concert then realize this vision. In Indian farming e-commerce initiatives, a top-down approach to the information culture creation and imposition; it does not, at least according to Ashraf et al. (2015), generate from the wants and needs of local farmers, who are typically too ignorant of ICT to understand what benefits it can offer them. Individuals do not exist as free-floating agents with perfect freedom to choose between alternatives based on the exercise of their rationality and intelligence; they are immersed in an information culture that determines

what officials find to be appropriate or inappropriate uses of ICT. In this way, information culture is part of social-deterministic theory; information culture is one of the ways in which the values, wants, needs, and aspirations of society are explicitly (as an India) or implicitly superimposed on individual decisions.

According to Ashraf et al. (2015), the information culture behind Asian farming e-commerce adoption is top-down, central, and semi-authoritarian in nature; in India, the government's ideas about how farmers should use ICT to run their businesses are mostly imposed on farmers. In the U.S. in particular, and in the developed world, in general, the information culture is not as authoritarian in nature. What farmers' in America perceive about the internet marketplace has driven choice and ownership (Wheatley & Buhr, 2005). Thus, economic actors' beliefs about the utility and efficiency of e-commerce drive ICT and e-commerce information cultures in the U.S.

In a study examining the Internet use and adoption by sugarcane farm businesses in the Kwazulunatal Midlands, Ferrer, Schroder, and Ortmann (2003) identified three primary characteristics are guiding farmers' decisions. The internet has proven to be a valid source of information about the farming industry and yields positive results when ample time is properly devoted to applying to the farming business (Ferrer et al., 2003). These factors suggest that the adoption of Internet connectivity and applications relies on familiarity with the Internet. That is, farmers, like these sugarcane growers, who are less familiar with the Internet are less familiar with the benefits of connectivity and the use of

e-commerce strategies. As a result, they are less likely to adopt e-commerce strategies and other online applications and technologies for use in the business side of farming.

The adoption of e-commerce in developing countries, on the other hand, relies on different factors than in the developed world. According to Datta (2011), some of these factors include the expectations of technology performance, technology opportunism, and social influences. While these factors affect the decision to adopt the technology, the driving force behind the expansion of technologies in developing countries is a desire to improve socio-economics in the countries (Datta, 2011). This can be illustrated through the adoption of e-commerce by farmers in developing countries, which provides increased accessibility to global agricultural data, resources, and supports, and potentially expanding market demography for these farmers.

There seems to be far more literature on farming e-commerce that is rooted in the theory of economic incentives than related research based on the theory of information cultures. The reason for this bias lies in the highly important nature of the theory, namely, that, at least in developed countries, farmers' ICT and e-commerce behavior can be modeled as rational, causal, want-maximizing, and risk-reducing behavior. On the other hand, the theory of information culture makes a more daring suggestion, namely, that the decisions of individual economic actors (such as small farmers) emerge from within the context of culture and, therefore, should not be thought of as resulting from the pure exercise of free will. Farmers' ICT and e-commerce decisions, in information culture theory, can be determined rather than independent decisions.

Castleman (2004) examines the role of culture in the decision-making rationale of small farmers, particularly in comparison to large-scale farmers. According to Castleman (2004), "[Decisions by small farmers] involve personal relationships, social esteem, lifestyle issues, and family considerations" (p. 31). When compared with large-scale farming, small farm farmers are much more likely to use socially-based rationale when making decisions about e-commerce adoption. This may account for the sluggishness of e-commerce adoption by small farm farmers. That is, since small farm farmers rely on social rationale rather than economic- or business-driven rationale, they mainly have not felt the need to implement e-commerce strategies. However, it is also likely due to a lack of awareness about technologies and their benefits for small-scale farming (Castleman, 2004).

The question of whether behaviorism or rational decision-making is more explanatory of farmers' e-commerce adoption behavior may seem merely academic; however, the need to understand the roots of farmers' behavior has more than theoretical interest. If it were affirmed that a large proportion of farmers were resisting e-commerce because of an innate prejudice against technology, then the kind of supply-side rural e-commerce policy suggested by Graham and Hanna (2011) would be of limited value because it would not address the demand side of the problem. Rationalists such as Graham and Hanna tend to assume that if low e-commerce adoption among farmers is a problem, then the solution is to provide more infrastructure, technology, and support (e.g., increasing the supply of e-commerce components). This approach has been tried in

both Australia (Pollard, 2003) and Canada (Graham & Hanna, 2011) among the developed countries and in Asia (Ashraf et al., 2015) and Nigeria (Adelola, Dawson, & Batmatz, 2014) among the developing countries.

In America, however, it is unlikely that any governmental coercion could promote e-commerce adoption, so the standard rationalist policy (Busch, 2011) is to assume that small farmers and other predominantly rural businesspeople will adopt e-commerce given some set of supply conditions. Basu and Chakraborty's (2011) work suggested that such an approach, however, was unlikely to succeed. American farmers have access to the infrastructure they need, and many of the e-commerce non-adopters could either (a) be motivated by non-rational reasons (such as social or culture resistance to e-commerce) or (b) have ideas about the economic utility of e-commerce that might not be accurate. In either case, it would be useful for researchers who work with a population of farmers to at least be aware of the possibility that some combination of social determinism and behaviorism, enforced by the dynamics of local communities, is responsible for the non-adoption of e-commerce.

Basu and Chakraborty's (2011) work, which exposed the lack of a significant connection between e-commerce infrastructure and e-commerce adoption in rural America, provided some support for the idea that socio-behavioral reasons might be partially responsible for e-commerce non-adoption. There is another work that supports the hypothesis that behaviorism is a major factor in farmers' technology decisions. Dorfman and Karali (2010) used statistical procedures to illustrate that farmers make

many important decisions, including hedging, based on habit (which is behavioral) rather than calculation (which is rational). However, this conclusion is not common in literature. It is possible to look at the same data about farming ICT adoption and come to very different conclusions, both regarding data analysis and resulting policy suggestions. The broad expansion of the Internet throughout rural areas should negate the concern by small farm farmers' that conducting business online is not a viable option. Continuous communications, education and outreach programs could help to address the continued misnomer about to the Internet not being a viable option to conduct business (Briggeman & Whitacre, 2010). Briggeman and Whitacre (2010) suggest that non-use of the Internet is not a rational decision: If farmers understood and were able to navigate the benefits of the Internet, then they would adopt ICT in greater numbers. However, it is also possible that farmers who are not taking e-commerce are making rational decisions, albeit based on a logic that is not immediately apparent to quantitative researchers who do not spend extensive time trying to understand the complex roots of individual farmers' decisions. Additionally, the dynamics of profit and opportunity are not immediately apparent to non-insiders as was suggested by Kourgiantakis, Matsatsinis, and Migdaleas (2012) in their study of the agricultural e-markets of Crete. Liang (2014) confirmed this in in the study of organic food. This kind of research implies that researchers ought to be very careful when using labels such as rationalism, social determinism, and behaviorism. It is possible, for example, that a farmers' decision to stay away from e-commerce because of a rational decision (e.g., his or her justified belief that a particular crop will not sell well

on the Internet) could be wrongly coded as a socially determined or otherwise non-rational response.

It is also necessary to acknowledge that, at least in some cases, farmers' non-adoption of e-commerce is due to behavioral factors. While there does not appear to be much, if any, scholarly work on the behavioral aspects of technology adoption for small American farmers, in particular, there is recent work on the behavioral aspects of global farmers' technology adoption that has reached interesting conclusions. Maartens and Barrett (2012) conducted a study on the role of social media in farmers' technology adoption decisions and discovered that a mix of rationalism and socio-behavioral reasons accounted for farmers' technology adoption attitudes.

Correlations may be drawn between the use of e-commerce technologies telecommunications in some communities. For example, Wilde (n.d.) asserts that the adoption of communications enhance communities is mixed, just as the adoption of e-commerce is mixed. According to Wilde (n.d.), "The adoption of electronic services may be variable, the degree being dependent upon the need for substitution of real services where the population has made them undesirable" (p. 14). In other words, if there is a community group that does not find the use of telecommunications enhanced communities beneficial, they will not be adopted. This is the same issues facing the adoption of e-commerce among small farm farmers.

Maartens and Barrett (2012) made an important point about farmers' behavior, namely that non-rational decision-making does not necessarily lead to sub-optimal results

for the farm. According to Maartens and Barrett (2012), farmers' instructive and behavioral responses to technology represent, at least in some cases, wisdom about farming operations that has been passed down from previous generations (and, as such, can be thought of as the combined knowledge of a farmer's community). On the other hand, once received wisdom enters the cultural repertoire of a farmer, it hardens and renders farmers unable to examine consciously (or change) what they believe, or understand why they feel it. As anthropologists, Maartens and Barrett were sensitive to both of these decision-making influences within farmers. Arguably, this bias can be seen in the work of Briggeman and Whitacre (2010), who, in their work on the ICT adoption patterns of American farmers, argued that farmer non-adoption of e-commerce was necessarily based on ignorance. Without denying that some farmers might, in fact, be ignorant of the benefits of technology, Maartens and Barrett (2012) also pointed out that small farmers tend to be an insular and backwardly looking community that resists change not out of ignorance, but out of a conviction that the old ways of doing things are best.

Gap in Literature

An examination of current literature reveals a significant gap in the current literature. Specifically, there is a notable lack of knowledge and research into the practical application of strategies in farming and how those strategies are focused. Some farmers choose to use e-commerce while others do not. This reasoning, along with how e-commerce is applied in small farming, is not addressed in the current literature.

One of the conclusions of the literature review is that there is a divergence between two motives for using and managing e-commerce: Economic rationalism and various non-rational reasons are under the heading of information cultures, whether borrowed from other farmers or imposed by regulatory authorities. There are distinct differences in how each of Miles et al. (1978) strategic focus areas can be applied to each type of motivation. It is possible that e-commerce management differences between larger and small farms can be understood as part of this framework, which could give valuable insight into how and why small farms are not obtaining the full value of e-commerce, despite clear evidence that e-commerce and technological solutions are beneficial to streamlining operations and achieving financial goals (Dwivedi et al., 2013; Donário et al., 2012; Mata, Sanz, & Razquin, 2016).

However, research must address this gap in knowledge and gain a deeper understanding of the application of specific strategic focuses by small farm farmers. The current focus of research in this area is whether or not farmers use e-commerce and, separately, the positive and negative implications of using e-commerce in farming operations. Beyond that determination, there is little interest in how or why farmers utilize e-commerce or what impact that may have on their overall farming operations. Some literature focuses on outside influences. For example, Leroux, Wortman, and Mathias (2001) examined the determining factors of the development of business-to-business (B2B) e-commerce in agriculture. They determined that the three dominant

factors are the structure of the agricultural industry, the complexity of the product, and the high-touch nature of transactions (Leroux et al., 2001).

Previous researchers seemed to take an industry perspective rather than the perspective of the decision-making factors used by individual farmers (Leroux et al., 2001). The first factor is the change that has occurred in the agricultural industry through consolidation. According to Leroux et al. (2001), "In the last decade, consolidations at all levels of the value chain have changed the traditional relationships between players" (p. 206). Essentially, these consolidations have led to barriers within the agricultural industry, which creates problems for small farm farmers. In addition to the changes within the agricultural industry, another factor influencing the development of the e-commerce industry is product complexity (Leroux et al., 2001). This is the result of common price references for commodity products as well as a focus on the industry for more complex end-user driven products (Leroux et al., 2001). This once again negatively impacts small farm farmers if they are unable to provide these more complex products for end-users. It may also explain why e-commerce interactions within the agricultural industry focus on relationships with suppliers rather than end-users (Henderson, Dooley, & Akridge, 2004). Leroux et al. (2001) also explains that high-touch transactions have slowed e-commerce development in the agricultural industry. That is, the agricultural industry, despite becoming more automated and including e-commerce and technology-based solutions, is still heavily reliant on face-to-face interactions. For many, this is a limiting factor in the use of e-commerce, particularly in B2B transactions (Leroux et al.,

2001). While this information is valuable, it is focused on external forces and their influence on the development of e-commerce rather than its use within the industry. These external factors have shaped the progress of e-commerce within agriculture, but not how farmers use it or why they choose to use or not use it.

With additional studies, scholarship can concentrate on dealing with the rationale behind small farm farmers' decisions. A lack of knowledge is a significant barrier to the implementation of e-commerce in a variety of industries (Solaymani, Sohaili, & Yazdinejad, 2012; Li & Xie, 2012). Shemi (2012) examined factors influencing e-commerce adoption among small and medium enterprises. Though the study does not deal exclusively with agriculture, the ideas can be applied to small farm farmers. Specifically, the study explains that a lack of sufficient knowledge about e-commerce and technology, including the benefits of utilizing e-commerce for small farms (Shemi, 2012).

Along the same lines, small farm farmers must have clear evidence that the use of e-commerce within their specific operations is beneficial. For example, within the commercialization of small farms, there have been governmental frameworks established to regulate and encourage commercialization. However, within this regulatory development, there are no assurances that the developments are beneficial for small enterprises as well as larger ones (Pingali, Khwaja, & Meijer, 2005). While the same concerns can be applied to e-commerce for small farming, there is minimal literature

addressing this type of concern that may or may not have a direct and significant impact on small farm farmers' decisions to adopt or not adopt e-commerce.

Operational research provides a foundation on which research can be built and then applied to business decision-making (Verma & Singh, 2015). When small farm farmers are equipped with additional research, they will not only have a better understanding of the role of e-commerce in small farm farming but can use the research to overcome their barriers to implementation to gain the benefits of the application. It is within this gap in knowledge that the current research proposal exists. There is a great deal of research dealing with the use of e-commerce in different industries as well as factors influencing the agricultural industry. While there is some research explaining the reasoning behind decision-making about e-commerce utilization, it overwhelmingly omits the perceptions and logic used by small farm farmers in the agricultural industry, or examines external factors rather than the internal decision-making process.

The purpose of this transcendental phenomenological study is to explore U.S. small farm farmers' decision making in managing farm operations as understood through the Miles and Snow typology of strategic management. It is hoped that the results of the research study will provide insights for farmers, researchers, and other key stakeholders so that small farm farmers will be able to operate and thrive in the American agricultural industry, effectively adapting to the changing demands of technology. Specifically, this study will address the significant gap that exists in literature as to the rationale behind

small farm farmers' decision-making process in the adoption or non-adoption of e-commerce as part of their operations.

Due to this gap in the literature, this research project will not only help bridge the gap but further build knowledge in the area of e-commerce utilization. Understanding the reasons behind small farm farmers' decisions to use or not use e-commerce within their operations can lead to a better understanding of the impact of e-commerce on society and business as a whole, and on the agricultural industry in particular. E-commerce is frequently shown as being highly beneficial to communities due to the positive impact it has on economies (Khanal, Mishra, & Koirala, 2015). Countries that have access to capable internet and a marketplace can better compete globally (mostly US & Europoe) over those who do not (Al-Qirim, 2005). Even within agriculture, e-commerce has created a global environment in which the previous barriers to success are dramatically limited due to increased communication and access to resources, particularly in rural areas in which it is difficult for farmers to access resources and effectively compete with larger farm enterprises (Larson, 2014). In a case study by Ohmart (2002), four small farm farming enterprises in California revealed that the utilization of e-commerce as part of their operations and marketing strategies was beneficial, and they were able to integrate e-commerce strategies and technological solutions into other aspects of their farming operations. In addition, Khanal et al. (2015) revealed that access to the Internet among small farm farmers increased business and household income and decreased some household expenses and input costs. This would

be beneficial for traditional small farm enterprises as well as other farming structures, such as rural tourism (Huang, 2006).

Despite that interconnectedness and increased ability to compete through the added value, small farm farmers do not utilize e-commerce to the same extent as in other industries. Farmers continue to avoid the use of e-commerce strategies for outdated non-technological solutions. Therefore, this raises a clear question as to why this occurs. If research shows that e-commerce utilization by small farm farmers improves operations, income, and other factors, there must be a reason that these farmers continue to avoid the use of e-commerce in their operations. Since this research study addresses the need to understand why small farm farmers make the decision to adopt or not adopt e-commerce within their operations, the results of the study will serve two significant primary purposes within the existing body of knowledge.

The decision-making process within farming, particularly for small farm enterprises, is important. The reasons farmers make business, and operational decisions have an impact on their operations as well as those impacted by their operations, such as their suppliers and customers. As a result, understanding the decision-making process for this population group provides an understanding of the agricultural industry.

Decision-making, even among small farm farmers is found throughout current literature. However, the focus of this research is predominantly on external factors or on areas other than technology. Kryzworzeka (2013) examines decision-making among small farm farmers in Poland with an emphasis on the role of socioeconomic factors on

those decisions as well as the implications for EU policy development. Peters and Gregory (2014) also examine networking and decision-making in the context of EU policy development. Misaki, Apiola, and Gaiani (2015) address technological components, but view them as a means for making decisions rather than as a decision to be made. Brudermann, Reinsberger, Orthofer, Kislinger, and Posch (2013) examine the decision-making process in the integration of technological solutions in small farm farming. However, the research deals with the decision to integrate solar technology, which has much less impact on overall operations and the intersection between farmers and their customers or suppliers (Brudermann et al., 2013).

Sutherland et al. (2012) deals with the general decision-making process among farmers. They examine this process in the context of the farming industry at large. Certain events are known as "trigger events" will strongly influence farming practices in which farming managers will deepen their consideration for a more efficient method of conducting business (Sutherland et al. (2012). This is perhaps, more applicable to the issue of e-commerce adoption by small farm farmers. However, this study once again must adapt to fit the issue of e-commerce rather than dealing directly with it. Once again, farmers must piece together research to draw conclusions to have sufficient knowledge to understand decision-making as it relates to e-commerce adoption. There is simply not enough research into e-commerce decision-making for small farm enterprises for farmers to justify a decision based on research.

In examining e-commerce and agriculture directly, there is a great deal of information. However, the majority of literature is externally focused. Yindi and Hongje (2015) and Li and Gao (2011) both deal with e-commerce as it relates to the supply chain. This is focused externally in that it deals with the supply chain rather than the operations on the farm. Zhao and Tian (2014) deal with e-commerce and agriculture but focus on the difficulties in adoption based on the structure of e-commerce business in China. This focuses the decision-making externally in that the overall e-commerce business structure does not effectively align with small farm farming in China.

It is within this context that the significance of this study exists. The study deals directly with the decision-making process and rationale used by small farm farmers to decide whether to adopt e-commerce as part of their operations or not. The study will fill the gap in the existing literature in order to provide better and more significant research for small farm farmers seeking evidence and justification for a decision. Essentially, the results from this study will give small farm farmers clear information addressing the decision-making process of integrating e-commerce into operations. This will prevent them from having to do their own research and piece together information from different research areas, such as decision-making separate from e-commerce, in order to draw their own conclusions and then make a decision. Instead, they can examine the results from the study to understand decision-making as it relates to e-commerce, and then use the additional research as a supplement for this study to strengthen the claims made resulting from the data collected. In this way, the study will expand existing literature to apply

directly to small farm farmers' needs. The results of the research study yielded the following findings:

What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

1. Small farm farmers experience farming operations as primarily family- and community-focused.
2. Small farm farming is complex, with a wide range of external factors that influence life, farming operations, and decision-making.
3. Small farm farmers do not typically view fellow farmers as competitors, but view them as a source of support and advice.

When confronted with change, how do you deal with difficult decisions?

1. Small farm farmers rely on fellow farmers for support and advice in order to make difficult decisions.
2. Small farm farmers rely on their established procedures within the farming operation to make difficult decisions.

How do you feel about the use of technology in managing your farm?

1. Small farm farmers see the value of incorporating technology, including e-commerce, in the management of their farming operations.
2. Small farm farmers who do not utilize e-commerce view it as impractical or non-applicable to their own operations.

These findings address gaps in literature in that the results indicate why some farmers elect to not utilize e-commerce in their farming operations as well as how they address decision-making processes, which can lead to the decision to use or not use e-commerce within their farming operations. Since small farm farmers rely on insights and support from fellow farmers, who may also be reluctant to adopt e-commerce solutions, this results in these farmers also making the decision to not use e-commerce solutions. Instead, they are more likely to rely on the solutions and decisions that have been proven effective in the past for small farm farming operations. As a result, these findings result in a greater understanding of the decision-making processes by small farm farmers as it relates to the implementation of technological solutions.

From the perspective of existing research, the findings indicate an emphasis on external factors in the process of decision-making, which includes the land itself, weather, the needs of the community, and other similar factors. Secondary to external considerations are factors related to business, such as financial considerations, the organizational strategy, laws and regulations, and market trends. This shows that the focus of decision-making is on the farming aspect of farming operations and the business components of operations is not as prevalent. This does not mean that small farm farmers do not find the business factors important, but the practice of farming is more important than the practice of business for these farmers. Since the primary gap in literature deals with a lack of knowledge about decision-making processes, this information is valuable to begin closing that gap.

As with the decision-making process, findings indicate that farming is more important than business in determining the best strategies to deal with difficult decisions. As a result, farmers rely on support from fellow farmers and organizations as well as an analysis of how decisions will impact the farm and its operations in order to make difficult decisions. This also helps to close the gap in current research, providing insights into the ways small farm farmers make decisions. This, paired with insights into the factors that influence small farm farmers' decision-making, can be used to understand the intersection between the practice of farming and the business of decision-making in operations.

While the decisions to use or not use e-commerce appears to be roughly even among the participants, it is important to note the context of this decision within the findings regarding decision-making. Therefore, the decision to use or not use e-commerce was based on a wide range of factors, such as the needs of the community, and the decision was made using a number of strategies, including an impact analysis or by seeking insights from fellow farmers. Therefore, the findings from the research provides a better understanding of the rationale behind the utilization of e-commerce or lack of utilization of e-commerce. This understanding can be used to bridge the gap in current research, particularly as technology and e-commerce become more fully integrated into all areas of business, including farming operations, even among small farm farmers.

Conclusion

Small farms have an important part in the rapid expansion of the U.S. agricultural sector (USDA-NASS, 2015). Ninety-two percent of all farms in the United States are classified as small with small farms being defined as those with annual gross revenues of $250,000 or less (USDA-NASS, 2015). A way to increase the competitiveness of small farmers is through electronic commerce (e-commerce) (Briggeman & Whitacre, 2010; Roe et al., 2014). E-commerce, an aspect of information communications technology (ICT), is the buying, selling, and marketing of goods and services online (Hua et al., 2015).

E-commerce lowers costs, increases revenues, raises productivity and brings access to new markets (Briggeman & Whitacre, 2010; Roe et al., 2014). E-commerce has advantages for small farmers seeking to expand opportunities (Alston & Pardey, 2014). However, there is a lack of understanding in the strategic management of e-commerce. Instead, e-commerce is frequently applied to parallel enterprises, such as retail (Carlucci, De Gennaro, Roselli, & Seccia, 2014). This type of application can be adapted to small farm farming but serves to highlight the need for research in this particular area to benefit the knowledge base of farmers operating small farming enterprises. Miles and Snow's strategic typology provides a means of better understanding the rationale behind small farmers' management decisions (Miles et al., 1978). Understanding this rationale can help give information to small farm farmers so that they have the research needed to make an informed decision about the use of e-commerce.

Eighty percent of farmers adopt e-commerce identified by Bojnec and Latruffe (2013) as economic rationalism, a motivation grounded in Adam Smith's critical theory of economic activity as a means of maximizing personal monetary gain (Smith, 2010). The first unknown about farmers' e-commerce activities pertain to the 20% of adoption reasons that, according to reasons of economic rationalism do not ground Bojnec and Latruffe (2013). Specifically, the motivation for this 20% of non-rational adopters (Bojnec & Latruffe, 2013) has not been systematically cataloged.

Theories suggest economically non-rational reasons that small American farmers might adopt e-commerce; diffusion of innovations theory (Rogers, 2010) suggests that farmers could take e-commerce out of a desire to imitate their peers, a form of social behaviorism detected in a previous study of small farmers (Maartens & Barrett, 2012). It could also be the case that the environment promotes e-commerce adoption at all costs (Hua et al., 2015). While these kinds of theories have managed to explain the economically rational as well as non-rational contexts of e-commerce technology adoption, they have not been applied to small American farmers, and they have not been used as a systematic basis from which to understand differences between small and large farms regarding technology management.

Chapter 3: Research Method

Introduction

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations through use of the Miles and Snow typology of strategic management (Miles et al., 1978). This chapter includes a presentation of the research questions, followed by a discussion of the research methods and design. This section also includes an overview of the participants, instrumentation, and data collection and analysis procedures. In addition, it includes discussion of the methodological assumptions, limitations, and ethical considerations of the study.

The purposive sample consisted of 30 small farming business in operations with revenue of less than $250,000 per annum in Kansas and Missouri. I stratified participants who used e-commerce and those who did not, in order to arrive at the appropriate sample size of 30 (15 in each of the two categories) to adequately address the research questions. An interview guide was used during the semistructured interview process to ensure consistency when conducting interviews. In their interview responses, participants described the content and character of their e-commerce management decisions and experiences. I used member checking to ensure that I accurately captured what the respondents meant.

Research Design and Rationale

The purpose of this discussion of methodology is to provide readers with a sufficient level of detail to ensure replicability of the study. This section will contain a discussion of participant selection, instrumentation, and data collection and analysis procedures. I used the transcendental phenomenological design to gain insight regarding the intentions of the participant farmers concerning their decision to adopt or not adopt e-commerce strategies; I was particularly interested in understanding how participant farmers' environments shape their decisions. Transcendental philosophy is a qualitative method that is used to reveal a social phenomenon and examine it, in conjunction with participants (Moerer-Urdahl , 2015; Perry, 2013). The researcher when through the Epoche, transcendental reduction and imaginative variation processes to get a better understanding of the phenomenon being investigated. Instead of telling the small farmer participants how to solve their problems, I sought to provide a better learning experience by applying the Epoche method. I sought to purge myself from my daily familiarities so that I could be open and conscientiously listen to the voices of the small farm farmers, rather than impose any of my own ideas on them. Doing so allowed me, when interpreting data, to develop improvement strategies, techniques, and suggestions based on my conversations with participants rather than on my pre-existing worldview.

Use of transcendental reduction allowed me to focus precisely on the small farm farmer's responses, as if hearing them for the first time. With the imaginative variation process, I was able to think about participants' rationales for their use or non-use of e-

commerce with no preconceptions. In doing so, I was able to come to a better understanding, I believe, of how and why small farm farmers use or do not use e-commerce.

A transcendental philosophy method allowed me to scrutinize the study phenomenon objectively and see things that might have otherwise been overlooked. This approach allowed me to not only uncover the inner substance of the participants' resistance or acceptance of e-commerce but to also to identify common rationales in participants' responses for the use or non-use of e-commerce. In further analysis of the transcendental philosophy, applying the transcendental philosophy not only allowed the researcher to separate preconceived notions relating to a small farm farmer's application of e-commerce, but also helped to appreciate the manner in which the farmer deploys his or her business through a new and unbiased perspective.

I considered various methods for analyzing small farm famers and their use and understanding of e-commerce as part of their business models but decided that the most efficacious manner of analysis would be from the transcendental viewpoint. The use of a transcendental phenomenological design helped me to remove any priori bias I might have had regarding a farmer participant's non-use of e-commerce. It also allowed for new insight regarding how and why small farm farmers in the United States decide to use or not use e-commerce to assist with managing farm operations.

The dearth of research on the topic of small farm farmer's use of e-commerce from a transcendental approach was also used to examine how the experiences of small

farm farmers affect other farmers (Moerer-Urdahl , 2015; Perry, 2013). This research provided greater understanding of the overall paradigm of e-commerce use or non-use by small farm farmers and helped bridge the gap in existing literature. According to Moustakas (1994), use of a transcendental phenomenology approach facilitates a detachment on the part of a researcher from any preconceived ideas, biases, or perceptions in order to see the small farmer's experiences through new lenses.

Prior to selecting the transcendental approach, I also considered a hermeneutic one. A hermeneutic approach primarily concerns language and the interpretation of one experience (Kafle, 2011), both of which were not applicable to this study. The hermeneutic interpretive phenomenological approach examines the understanding of the individual as a basis for decision-making (Kafle, 2011). Hermeneutics focuses on the unique experiences of an individual from that individual's perspective (Kafle, 2011). It is the process of interpreting verbal and nonverbal information (Kafle, 2011). Given my focus on examining the perspectives of small farm farmers in order to better understand why they do or do not adopt e-commerce strategies, a hermeneutic approach would have allowed me to identify the reasoning behind participants' decisions from their personal experiences. Use of a transcendental approach, in contrast, helps to explain how perceptions transcend the individual's experiences and apply to a broader reality (Kafle, 2011). Using this approach, the results from the study's interviews, and the themes that emerge from analysis, can help apply the conclusions to a broader population based on

common experiences or circumstances (Pringle, Drummond, McLafferty, & Hendry, 2011).

Despite the similarities between the two approaches and benefits of the hermeneutic approach, the transcendental approach was determined to be more beneficial for this study. Since there is little research about this topic, there is a need to identify and describe the phenomena. The transcendental approach was more appropriate for this purpose, I concluded. The transcendental approach was also used to examine how the experiences of small farm farmers affect other farmers. This transcendental approach provided greater insight into the phenomena for the purposes of bridging the gap in existing literature.

A transcendental phenomenological design guided this study as the approach of choice for obtaining insight into how and why small farm farmers in American use or do not use e-commerce to assist with managing farm operations. The qualitative research method was chosen to examine the e-commerce adoption practices of small farm farmers. The researcher chose this method for research because it was most appropriate for the following reasons. First, phenomenological studies typically obtain and analyze the experiences of individuals from their perspectives to understand the actual lived experience of individuals and identify themes that challenge assumptions about a situation or issue. This approach can be used effectively for studies in which the phenomenon and themes are not known, such as when researchers are attempting to bridge a gap in literature or establish a foundation of knowledge on a particular topic. The

focus of this research project is to understand why small farm farmers choose to use or not use e-commerce. Within this context, the phenomenological approach is effective to establish an understanding of the use of e-commerce by farmers on small operations (Cilesiz, 2011; Pringle, Hendry, & McLafferty, 2011). More specifically, the study uses the transcendental approach within the context of phenomenology to identify the phenomenon experienced by small farm farmers as well as to understand it.

Schwandt (2015) also explains that a phenomenological research approach is appropriate for investigating emotional and intense human experiences. Through the examination and understanding of the phenomenon through the eyes of small farm farmers, using this method allowed the researcher to not only uncover the inner substance of the participants, but also to bracket and compare their responses to identify common rationales for the use or non-use of e-commerce. Schwandt (2015) clarifies that the phenomenological study used by researcher is specifically for understanding how people make sense of their lives and experiences. This type of insight cannot be achieved using the quantitative method. The overall focus is to obtain a deeper understanding of the individuals' experiences and to examine their thought process to be able to provide a complete picture as to why each participant decides to either use or not use e-commerce. Also, using this method further explains the rationale for the semi-structured interviews rather than the traditional phenomenological approach. The study focuses on the individual experiences of farmers; the semi-structured interviews provide the opportunity for the participants to explain their responses more deeply, and allows the interviews to

move in a specific direction based on the responses of the farmers. This approach will provide greater insight into the farmers' experiences and will not restrict the responses based on the questions asked.

The goal of a qualitative study is different from that of a quantitative study. Quantitative research primarily focuses on gathering numerical data that allows the researcher to accept their hypothesis or not. It focuses on testing the hypothesis through measuring specific variables. The qualitative research design solves questions on the "how and why" and quantitative research explains questions on the "how many."

The researcher explored using a mixed method design for this study, and the mixed method approach provides the researcher the ability to use both qualitative and quantitative methods to collect data. This method is appropriate when neither quantitative nor qualitative alone is sufficient to understand the research topic (Zarif, 2012). The intent of the study is to figure out why small farm farmers use or do not use e-commerce and based on my investigation the qualitative research methodology will better serve this purpose over the other existing methods.

Two quantitative studies, Pollard (2003) and Bhargava, Ivanov, & Donnelly, 2015, were able to illustrate that some farmers were making a non-rational economic decision in using e-commerce. For Thousands of small farm farmers, e-commerce adoption behavior cannot be understood entirely with the use of studies based on rationalist models (e.g., Bhargava, Ivanov, & Donnelly, 2015; Briggeman & Whitacre,

2010; Mishra et al., 2009; Woosegung & Klein, 2011). These quantitative studies contribute little to the phenomenology of technology adoption (Cilesiz, 2010).

The diffusion of innovations theory (Caravella, 2011) can be used to show the likelihood that this unexamined population of farmers is driven by a mix of social-determinist, behaviorist and rationalist influences sufficient data to support this interpretation is limited and behaviorist learning influences were evedent by farmers adopting e-commerce because they were bored or imitating others (Bhargava, Ivanov, & Donnelly, 2015). Published results of the above studies presented were limited to cursory excerpts from interviews without differentiation between rationalist, social determinist, and behaviorist explanations. This gap in the literature indicates a need for a transcendental phenomenological analysis of small farm farmers that can (a) to provide an understanding of specific e-commerce strategic business applications and (b) differentiate between small and large farms farmers as it applies to these e-commerce applications.

The transcendental phenomenological design for this proposed study is similar to the layout of a prior phenomenological study of e-commerce adoption experiences among farmers (Bhargava, Ivanov, & Donnelly, 2015). Pollard's (2003), quantitative survey of small farm farmer e-commerce adoption in nearby Australia concluded that farmers had mixed reasons for adopting e-commerce. The researcher also considered a case study as the design for this research because a case study enables the researcher to work in close collaboration with the participant and to have interaction on a daily basis (Moll, 2012).

The researcher decided against this approach because the aim of my study is to interview participants, capture their experiences based on their perspectives and reveal themes that challenge their underlying assumptions. According to Yin (2013), a case study design is not appropriate when the researcher is investigating a phenomenon in a typical environment, performing an evaluation, or trying to determine what happened and why it happened. Ethnographic research was not selected as the design for this study because ethnographic research focuses on a particular cultural group, which is not part of the proposed research study. Ethnographic research can also be very time consuming and expensive. The goal is to perform this study with little or no expense. The grounded theory was also considered for the research design, but it was eliminated due to the emphasis on interacting and developing a theory with a large number of people.

Role of Researcher

According to Englander (2012), the role of the researcher is to ensure that the participants are comfortable with the interview process. Also, the researcher's role is also to ensure that he or she has the organizational skills necessary to sort, analyze and transcribe the data. Last, the role of the researcher is to ensure he or she can ask probing questions to be able to capture in-depth information. The role of the researcher can be better understood in light of McNabb's (2010, p. 225) distinctions between quantitative and qualitative research. Under the philosophical foundations of ontology, qualitative researchers assume that multiple, subjectively derived realities can coexist, while quantitative researchers assume a single, objective world exists. Under epistemology,

researchers assume they must interact with their studied phenomena, while quantitative researchers assume they are independent of the study variables. In axiology, qualitative researchers overtly act in a value-laden and biased fashion, while quantitative researchers act in an unbiased and value-free manner. In a philosophical rhetoric foundation, qualitative researchers use personalized and informal language that includes context, while quantitative researchers use impersonal and formal language that is context-free. Finally, in procedures used in research, qualitative researchers tend to apply induction, multivariate, and multi-process interactions, while quantitative researchers use deduction and limited cause-and-effect relationships.

The researcher's role in this study was to report the facts of the study in a formal, value-free, and independent way reliant on deduction and context-free methods. To minimize bias, opinions were detached from the process; instead the outlined research protocol was followed. The researcher asked questions but did not interject observations so as not to influence participants' responses. The study was also conducted outside the researcher's geographic comfort zone in order to reduce conflict and bias and to maintain the integrity of the data collected.

Participants

The participants were drawn from a purposive sample of approximately 30 small farming business operations in Kansas and Missouri with a revenue of less than $250,000 per annum. The willing participants were sorted based on utilization of e-commerce to identify fifteen participants per group (e-commerce utilization and non-utilization) to

adequately address the research questions. This number of participants is considered optimal for a phenomenological study (Vagle, 2014). The exact number of participants will be determined by the point of data saturation, defined as the point at which further interviews are not yielding additional information (Vagle, 2014).

Due to confidentiality and privacy concerns, participants were not recruited from a database list of small farm farmers from the Chamber of Commerce. When the researcher inquired for small farm farmers statistics information, a representative from the Chamber of Commerce informed the researcher that they do not store farmers information where individuals would have open access to them. The researcher contacted the USDA, Alternative Farming Systems Information Center and National Agricultural Library to obtain census information that included land use, income, production processes, and additional farming factors. It is important to note that income was not provided by any agency due to privacy and confidentiality considerations. However, the USDA provided links to websites that facilitated the identification of farmers with no more than $250,000 gross annual farm revenues. One such site, called *Manta*, provides the title of the farm, the owner's name, contact information, and general revenue information for the farming operation. In addition to the information provided by these websites, the researcher used information from farmers' blogs, websites, and social media to determine potential participants. After identifying potential participants, invitation emails were sent to the farmers. Those who responded confirmed that their gross annual farm revenues were no more than $250,000. Information as to the utilization or non-

utilization of e-commerce was obtained after reaching out to farmers with no more than $250,000 gross annual farm revenues, which facilitated the participant selection process.

Participation was limited to (a) small farm farmers with no more than $250,000 in gross annual farm revenues and (b) farmers who do use e-commerce and those who do not use e-commerce. For the purposes of this study, "e-commerce" refers to the use of online business to purchase or sell in order to facilitate the management of operations, with an emphasis on the use of online sales by participants. Since rapport is a critical component of information gathering for this research project, the structure of the interview was used to create a connection with the interviewee. The researcher built a professional relationship with the participants to increase the likelihood of the success of the study. The professional relationship was maintained through communications via the phone and email channels. The researcher was clear about the intention of the study, and clearly, stated that this process is voluntary; therefore, the participants were able to withdraw at any time during the formal consent process.

Instruments

The primary instrument in a phenomenological study was the researcher (Kaufer & Chemero, 2015). The initial interview utilized the interview protocol. The interview protocol contained semi-structured, open-ended questions designed to collect rich narrative data about e-commerce decision-making experiences and attitudes related to management in each components of efficiency according to Bojnec and Latruffe (2008) which are: technical; scale; allocative; and economic. The researcher also asked follow-

up and probing questions, shaped by both the responses to structured questions and the interpretation of those responses.

Data Collection and Processing

Approval was obtained from the Institutional Review Board (IRB) of Walden University before commencing the data collection process to ensure that the process does ethical and adheres to IRB standards for research. The researcher contacted potential participants, owners, or managers representing their respective farms using e-mails and postal letters using the contact lists obtained from the Chamber of Commerce or other sources. Participants were contacted with a solicitation letter explaining the research study and their role in it (see Appendix A). The solicitation letter provided multiple methods by which the potential participant will reach out to express interest in the study, including a phone number and email address. U.S. mail was used in place of email for potential participants with no listed email address. There was no backup plan for recruiting additional participants because all of the eligible participants were contacted.

Once the individual responded to the solicitation letter and reaches out for more information, the consent letter was provided to the participant, which explained the study in greater detail, including the participant's role, expectations, and seeking approval for the parameters of the research project. The informed consent process asked the respondents to grant permission to be tape-recorded. The participants were included in the study even if they did not grant permission to be tape recoded. This direction is stated in the consent letter. The consent letter included instructions on how to withdraw from

the process. The consent letter also included directional instructions for participants in the event they became emotionally distressed during an interview. If the participant was unable to complete the interviews, he or she was withdrawn from the study. This did not occur.

Before conducting the interview, each participant received demographic questionnaire by email, asking them to complete it and send it back to me (See Appendix B). This questionnaire provided additional personal background information about the participants to help facilitate the interview, and enable the researcher to build rapport with participants. The participants interview was designed as face-to-face and in person at a mutually agreed upon public location. All follow up questions were conducted during the interview to eliminate any extra calls and emails to the participants. Interviews were recorded and data was manually transcribed where permission was obtained. In addition, where recorded permission was not obtained, the interview was also manually transcribed. Each participant completed one interview. On average, the interview lasted for one hour. During the interview, participants were able to decline to answer any question. This did not occur in the interview process.

The purpose of the interview was to present the semi-structured questions and to gather data. The purpose of member checking, which occurred at the end of the interview, was to verify the information gathered in the interviews (Vagle, 2014). The participants' responses were checked through an explanation of the answers based on the research notes and transcripts analyzed by the researcher. The researcher explained the

perception of the participant's responses, giving the participant the opportunity to clarify or change answers as needed.

Data Analysis

Data analysis was carried out according to the three-tiered technique of horizontalization, thematic, clustering, and synthesis (Vagle, 2014). Thematic grouping then created associations between shared concepts and themes. The researcher used this thematic grouping to synthesize the data and draw a conclusion. During the interview process is where the researcher gathered the data to be analyzed. Hand coding was used to identify similar statements and group themes. Coding is an important part of the data analysis process that develops themes, concepts, nodes and categories from the data (Schönfelder, 2011). The practice of coding each interview transcript allowed shared themes to materialize. The data analysis included handing coding, excel spreadsheets and automated processing.

During the interview process the researcher transcribed and compiled the participants' responses in Microsoft Word to conduct the data analysis. During the data analysis process, the researcher identified common themes which that evolved from the small farm farmers responses. Franzosi (2004) argues that the coding structure in thematic analysis is constructed based on the categories developed with the intent to summarize the more common themes. According to Patton (2002) thematic analysis enables pattern identification in the data collection process. Thematic analysis also allows the researcher to capture explicit meanings articulated by the participants. Excel was used

to facilitate the tabulation of the findings from the thematic analysis. NVivo version 10 software was used to assist with organizing and categorizing the data. Gavin (2008) explains that thematic analysis includes the following actions:

- The researcher must examine the transcripts for emergent themes
- Amalgamate similar patterns of those themes and place into sub categories
- Identify information in the transcripts that relate to the themes
- Examine the transcripts a second time to ensure the themes categorized are an exact representation of the participants responses

Data Analysis Technique

Patton (2002) explains that researchers must have a sense of creativity when collecting and analyzing qualitative raw data. The raw data will need to be logically organized into meaningful groups. The data analysis process below is a slightly modified version of what was outlined by Van Kaam (Moustakas, 1994). The steps were carried out as follows:

1. Transcribe the audio recordings of the interview sessions using the Microsoft Word program.
2. During the interview process, I will use the epoche method, which entails detaching any perception of biases, assumptions or viewpoints, or prejudices connected to the phenomenon being studied. The transcendental reduction will allow me to reduce my focus precisely on the small farm farmer's responses,

like I am hearing it for the first time. With the imaginative variation process, as I am listening to the farmers voice their rationale for the use or non-use of e-commerce, and in my mind, I am able to think about their response with no preconceptions.

3. Before wrapping up the interview, I will review each transcript with the participant to ensure that the information obtained was documented accurately and represents exactly what the participant wants to convey.
4. Categorize all meaningful information related to the phenomenon by carefully reviewing the transcripts.
5. List all pertinent and relevant statements obtained from the data transcripts on paper. Pertinent and relevant statements are those that describe the participants lived experiences when managing their farm operations.
6. Use an excel spreadsheet to group all relevant statements and to facilitate the tabulations of the findings.
7. Create a textual description for each theme describing what each participant experienced. This will help organize the data.

Once the data sorting and categorization processes were completed, NVivo was used to assist with automating the data analysis. NVivo was able to produce visual images of the interview process. NVivo was also able to assist with formulating trends, themes, and can produce graphs and spreadsheets to better visually demonstrate the analysis results. To

ensure reliability of the data, all interviews were recorded and transcribed by the researcher. This helped ensure confidentiality and integrity of the accuracy of the results.

Methodological Assumptions, Limitations, and Delimitations

An assumption of this study is that the information provided by participants is truthful and genuine. One limitation of the study is that farmers might have blind spots about their means of managing e-commerce. The researcher assumes that the reported level of gross annual income is accurate. The study was limited by the lack of quantitative data, the small number of participants, and the inability to generalize the findings beyond the selected participants. The study was delimited to include only farmers in Kansas and Missouri and to incorporate only qualitative data. The in-depth quality of information gathered compensated for these limitations and delimitations.

Ethical Assurances

Before commencing the data collection process, the researcher obtained approval from the Institutional Review Board (IRB) of Walden University. The four categories of ethical assurances in research include protection from harm, informed consent, the right to privacy, and honesty with professional colleagues. Regarding protection from harm, the risks are minimal and are limited to possibly psychological stress experienced during the interview process. The researcher contacted potential participants using e-mails and postal letters, sent to every farmer on the contact lists. Participants consented to record using the Walden University “informed consent process”. The approval included asking participants to allow digital recording of the conversations. The consent reassured

participants as to the privacy of the interview and the confidentiality of the data, and these assurances were part of the informed consent form and confidentiality agreement (see Appendix C). Digitally taped conversations were retained in a locked the researcher's home. A password-protected laptop provided the privacy protection for the interview transcripts, as did the emails between the researcher and the study subjects. Finally, all data (including electronic, taped, and paper data) will be destroyed no earlier than five years after the dissertation is completed. Honesty with professional colleagues will be maintained by making all transcribed interviews available after identifying information has been removed.

Issues of Trustworthiness

The elements of trustworthiness that needed to be addressed in this research project were credibility, transferability, dependability, and conformability. According to Coast & Horrocks, (2010) these four elements are used to assess validity in qualitative studies.

According to Borrego et al. (2011) credibility signifies the accurate reporting and documentation of the study results. To ensure credibility in this study, each interview session will be written and audio recorded. During the member checking process, each participant will have the opportunity to review his or her responses and provide additional feedback or clarity to each question. This will ensure that the participant is satisfied with the representation of the responses in the research project.

Transferability is another means to ensure validity. Transferability is the process by which the results of this study can either be transferred to other settings or contents, or where they can be applicable to similar situations (Beverland et al., 2010). To create transferability, this study will include small farm owners and managers from two regions. For this study, transferability is achieved through the variation of small farm owners, managers and the regions they are selected from. The results of this study may be transferable to other small farm owners and managers in other regions. However, while the results may be applicable to each region, additional research would be needed to determine the applicability of the conclusions on a larger scale.

Dependability is the third element of trustworthiness in a qualitative study. It addresses the permanency, accuracy, and consistency of the research inquiry processes over time (Beverland et al., 2010). Dependability was established through careful documentation of observations and keeping notes about any responses or situations that change over the course of the research project. Data triangulation helped to achieve dependability. The collection and validation of data gathered through interviews and documentation of field notes from small farm owners and managers in two regions contributed to data triangulation.

Conformability is the fourth element used to address trustworthiness in a study. According to Beverland et al. (2010) conformability is the process by which the study results produced by the researcher are able to be confirmed by others. The results documented by the researcher should be the intended interpretation messages conveyed

by participants, as opposed to researcher bias. Another means of ensuring conformability is through member checking. Member checking is the process that allows the researcher to validate the information gathered during the interview process. Conformability was established through support from current literature as well as documentation of data analysis procedures to ensure that the data has been checked sufficiently.

Interview Protocol

The primary data collection process was an interview conducted with each participant. The researcher conducted, on average, a one hour over the process of the research project. Data collection consisted of in-person interviews involving open-ended, semi-structured questions. New questions were permitted to be developed during the interview based on the reponses from the original open-ended questions as participants offer more details. The open-ended interview provided a means of exploring additional areas for investigation. The purpose of the interview was to present the semi-structured questions and to gather initial data (see Appendix D). Member checking occurred at the end of the interview. Member checking is the process by which the researcher confirms information provided by the participants, and ensures accuracy in the data analysis and reporting for the study.

Since rapport is a critical component of information gathering for this research project, the structure of the interview was used to create a connection with the interviewee. By building a rapport with the participants, their responses in the interviews were more likely to be honest and complete, which contributed to the validity of the

research study and its results. To that end, the interview began with questions considered "easy" to answer and help the participant adjust to being in the interview process. As the conversation continued, the questions may more in-depth answers with the hope that the participant will be comfortable enough with the interview to answer thoroughly and honestly. This also helped the participant "warm up" to the interview process. Since the interview questions dealt with the participants' perceptions and experiences, it was important for the participant to be comfortable during the interview process so that he or she could provide the best possible answers. The interview included only the participant and the researcher, even if a participant's farm was co-owned or co-operated with another farmer. This ensured that the answers provided reflect an individual's perspective.

Interview Protocol

When the discussion began in the interview, the researcher reminded the participant why he or she was participating in the interview. The participant was asked to be honest and complete when answering the questions, and to feel free to explain any answer in greater detail. The scripted questions were asked first, including any unscripted questions that arose over the course of the interview. At the end of the interview, the researcher reviewed the participant's responses with the participant to ensure that the information recorded was accurate, and the participant was satisfied with the answers. Transcriptions occurred within an hour of the completion of the interviews. This helped reinforce the concepts and replies in the investigator's mind, which contributed to facilitate analysis later.

Member checking is the process by which the researcher confirms information provided by the participants, and ensures accuracy in the data analysis and reporting for the study. The member-checking process occurred at the end of each interview to verify information and ensure accuracy in the data analysis and reporting for the study. At the end of the interview, the participant was given the opportunity to make any final comments or statements to address anything else the participant feels the researcher did not address or was not addressed adequately. The interview ended by reminding the participant of the parameters of the research project as it related to the participants' responses to the interviews, including the length of time the answers will be kept and the protocols in place to ensure the participant was satisfied with the researcher's representation of the responses in the final study.

Summary

This chapter examined the methods that will be used in the research project. A qualitative method and transcendental phenomenological design was used for this study as the tool of choice for obtaining insight into how and why small farm farmers in American use or do not use e-commerce to assist with managing farm operations. The researcher's role was limited to that of observer. The willing participants were drawn from a purposive sample of approximately 30 small farming business operations with revenue of less than $250,000 per annum. An interview guide brought consistency to the process as the interviews were conducted. Participants described the content and character of their e-commerce management decisions and experiences. Member checking

ensured the dependability of findings. Finally, the primary data collection was interviews conducted with participants for an average of one hour over the course of the research project. Data collection consisted of in-person interviews involving open-ended, semistructured questions.

NVivo TM (version 10.0) qualitative software was used to assist in the organization and coding. The coding focused on stratifying the comments into categories of Analyzing, Prospecting, Defending, and Reacting strategies. Data analysis was carried out according to the three-tiered technique of horizontalization, thematic clustering, and synthesis (Vagle, 2014). Thematic grouping then created associations between shared concepts and themes. The researcher used this thematic grouping to synthesize the data and draw a conclusion.

NVivo was able to produce visual images of the interview process. NVivo was also able to assist with formulating trends, themes, and can produce graphs and spreadsheets to better visual demonstrate the analysis results. To ensure reliability of the data, all interviews were recorded and transcribed by the researcher. In doing so, the researcher will ensure that the participants information were kept confidential, and ensure the integrity of the results remained accurate.

Chapter 4: Results

Introduction

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations through use of the Miles and Snow (1978) typology of strategic management. The semistructured interview questions were designed to be general enough to enable participant farmers to contribute their narratives without feeling prompted to be overly accurate in their responses, as recommended in the literature on qualitative methodology (Denzin & Lincoln, 2011). The overarching research question for this study was, as follows: What are the lived experiences of farmers in Kansas and Missouri in making decisions in managing small farm operations?

In addition to this question, three primary semistructured questions were used to gain a deeper understanding of the use of e-commerce among small farming operations in the United States. These questions were, as follows:

Question 1: What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

Question 2: When confronted with change, how do you deal with difficult decisions?

Question 3: How do you feel about the use of technology in managing your farm?

These questions, along with the primary research question, were used to examine the results and draw conclusions on the topic of e-commerce in small farm operations in the

United States. While these questions were not the only ones asked during the interview process with participants, they were the basic questions to assist the participants in discussing the foundation of the farmers' experiences and to explore their understanding of the role of e-commerce and information technology in their decisions.

Chapter 4 includes the results of the study. In this chapter, I will review the setting and demographics of the participants, explain the data collection and analysis procedures, and present the results of the study. These results form the foundation of the discussion in Chapter 5.

Demographics

The demographics of the participant pool was intended to be representative of farmers in the communities drawn from Kansas and Missouri. The participant selection was purposive in order to identify a sufficient number of participants, both those who used e-commerce and those who did not. Overall, 60% (n = 18) of total participants used e-commerce while 40% (n = 12) did not. This statistic shows a trend toward the utilization of e-commerce but is not overwhelmingly so. Table 1 shows the demographics of the participants. As the table illustrates, there was no gender difference in terms of participants' use of e-commerce. However, there were differences in use of e-commerce in regard to age. Based on the results, it is more likely that those who utilize e-commerce are younger, with the majority of participants in this group who use e-commerce being under the age of 60 and none being over the age of 70. Conversely, among the participants who did not utilize e-commerce, the majority were over the age of

60, and only one participant under the age of 50 did not utilize e-commerce. However, the use of e-commerce may be influenced by the overall ages of the participants. The majority of participants were between the ages of 41 and 70 (n = 23; 76.67%). The results show a shift in e-commerce use versus non-use within these age groups. Therefore, the results suggest that age may have a significant impact on the decision to utilize or not utilize e-commerce in farming operations.

Table 1

Demographics of Participants by E-Commerce Use

	Uses e-commerce	Does not use e-commerce
Gender		
Male participants (n = 19)	66.67% (n = 12)	63.6% (n = 7)
Female participants (n = 10)	33.3% (n = 6)	36.4% (n = 4)
Age		
≤ 40 (n = 4)	10.0% (n = 3)	3.33% (n = 1)
41-50 (n = 7)	23.3% (n = 7)	0%
51-60 (n = 6)	11.11% (n = 2)	13.33% (n = 4)
61-70 (n = 10)	6.67% (n = 6)	13.33% (n = 4)
71-80 (n = 2)	0%	6.67% (n = 2)
≥ 81 (n = 1)	0%	3.33% (n = 1)
Total participants	60% (n = 18)	40% (n = 12)

The comparison of age groups as to use and non-use of e-commerce is visually represented in Figure 1. The results indicate a clear difference in e-commerce utilization based on age group. Table 1 provides an overview of the demographic factors of participants. Figure 1 provides a closer look at the participants' e-commerce utilization

with a focus on age groups of the participants.

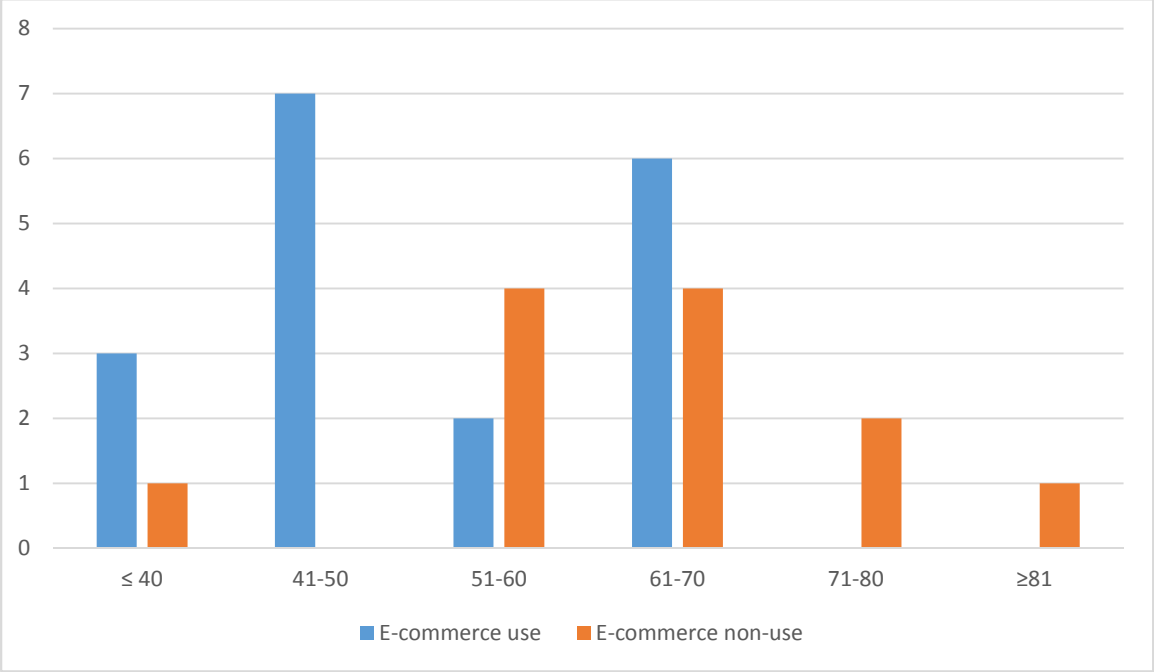

Figure 1. E-commerce Use by age group.

Data Collection

Data Collection

Before commencing the data collection process, approval to conduct the study was obtained from the Institutional Review Board (IRB) of Walden University. Next I contacted the Chamber of Commerce for a listing of small farms located in the Kansas and Missouri areas that had total annual incomes of less than $250,000. Unfortunately, the Chamber of Commerce could not provide the specific listings I needed because they did not store companies' statistical data onsite. The customer service agent recommended that I reach out to the US Department of Agriculture (USDA) to obtain a listing of

possible participants. I called the United State Department of Agriculture customer service line, and spoke with a customer service representative who walked me through reviewing the available reports on their website. The reports on the website provided a holistic view of all farms annual revenue, farm types and location, however, it did not list the specific farm names, nor did it list the annual revenue per farm. Research shows that every five years, the USDA preforms a Census that looks at land use, income, production practices, and more. The most current Census data for 2017 was not yet available; however, the 2012 data was very helpful for my research. It is important to note that income was not provided by any agency due to privacy and confidentiality considerations. However, the USDA provided links to websites that facilitated the identification of farmers with no more than $250,000 gross annual farm revenues. One such site, called Manta, provides the title of the farm, the owner's name, contact information, and general revenue information for the farming operation. In addition to the information provided by these websites, the researcher used information from farmers' blogs, websites, and social media to determine potential participants. After identifying potential participants, emails were sent to the farmers. Those who responded confirmed that their gross annual farm revenues were no more than $250,000. Once participants responded to the invitation, I narrowed the sample down to thirty small farms within the Kansas and Missouri areas. I wanted diversity in the type of farms I interviewed; therefore, I chose a combination of farms that produced wheat, corn, soybeans, fruits, vegetables, cattle and calves, hogs and pigs and sheep and goats. I felt like interviewing a

diverse group of small farmers would have added strength to my findings by having a broader spectrum of perspectives as to why small farm farmer use or not use e-commerce. I narrowed down the selection of participants to thirty and I sent the approved consent letter and the demographic questionnaire by email to each farmer. The participant pool was narrowed based on the demographics of the farmers, use or non-use of e-commerce, geographic location, and availability for participation in the study. In the body of the email, I thanked the participants for their interest to participate in the study, and asked them to complete the documents and send them back to me.

Three days before the scheduled interviews, I reached out to each participant by phone to confirm participation and meeting location. Thirty interviews were conducted with three open-ended questions. I ensured that the participants were comfortable with the overall interview process before I begin with the questions. Three of the interviews were conducted by phone due to scheduling conflicts. The other 27 were conducted face-to-face. At the beginning of each interview, I thanked the participants for their time, and reminded them that upon request, they could receive a copy of the study findings after the results were approved. I also shared that all information will be kept confidential. Next, I shared my role as the researcher, explained the interview process and solicited questions. I encouraged each participant to be open, honest, and to speak freely about his or her farm management experience. Participants described the content and character of their e-commerce management decisions and experiences. The duration of each interview was approximately one hour over the course of the research project. One interview was

conducted with each participant and most all participants agree to be recorded. All responses were documented and reviewed with the participants at the end of the interview. Member checking took place at the end of each interview to allow participants to verify and make changes to his or her responses.

During each interview, I provided ample time for participants to think about his or her response. I transcribed the interviews on notepaper and within one hour after completion, I transferred the information on my computer to Microsoft Word. To minimize any transcription errors, I compared the notes on the notepaper to the recorded tapes. No errors were visible.

To reiterate the consistency of my process, and to ensure reliability of the data, all interviews were recorded and transcribed by me, the researcher. Through this process, the participants information was kept confidential and the integrity of the results remained accurate.

Data Analysis

The data analysis process consisted of the transcribed interviews to understand the participants' decision-making process to adopt or not adopt e-commerce. Hand coding was used to identify similar statements and group themes. The data analysis included handing coding, excel spreadsheets and automated processing. The data collected from the interview questions was coded by the researcher and entered into Excel spreadsheets. NVivo was used to assist with automated processing for the data analysis. Common themes materialized as I assessed each response line-by-line. Each question was analyzed

separately. I documented all patterns and themes until no new information was present. At this point, I knew I had reached data saturation.

Throughout the interview process, I reminded myself to be aware of the potential bias that could occur while interpreting the responses as the participants were sharing their thoughts. According to Beverland et al. (2010), if the researcher's opinion influenced hand coding, then bias exists. I applied the epoche' method which allowed me to detach any perception of biases, assumptions or viewpoints, or prejudices connected to the phenomenon being studied. The transcendental reduction allowed me to reduce my focus precisely on the small farm farmers' responses, like I was hearing them for the first time.

Imaginative variation is a method of heuristics in phenomenological research that facilitates plausible inference by the research in regard to the data collected. This can be used to draw conclusions and determine intentions in participants' responses in the event those responses are unclear. Using this method, I was able to think about their responses with no preconceptions. As a result, I was able to receive new information about farm management and decision-making that was not so obvious in previous research.

Once the data sorting and categorization processes were completed, NVivo was used to assist with automating the data analysis. NVivo was able to produce visual images of the interview process. NVivo was also able to assist with formulating trends, themes, and can produce graphs and spreadsheets to better visually demonstrate the analysis results. To ensure reliability of the data, all interviews were recorded and

transcribed by the researcher. This helped ensure confidentiality and integrity of the accuracy of the results.

Results

The following are my findings from the research study through semi-structured interviews with the chosen participants from Kansas and Missouri. According to participants, farming is the key economic driver in Kansas and Missouri today. Families depend on small farm farmers to produce fresh fruits and vegetables. Families also appreciate knowing how and where their fruits and vegetables are grown. They visit the farms often to purchase produce, but they also rely on farmers to educate them on how to grow certain crops, and how to cook them. Small farm farmers depend on families to purchase their crops. They also rely on families to assist with harvesting. Kansas is known for growing Wheat. According to some small farm farmers, living in Kansas, there are many opportunities to farm. On a weekly basis, the community and visitors look forward to going to the farmers markets to purchase fresh fruits and vegetables. This study shows that most small farm farmers partner with farmers markets to sell their products during the summer months. Small farm farmers invite visitors and the community to assist with harvesting the fruits and vegetables, which bring sales and publicity to their farms. The small farm farmers sow their seeds right before winter to ensure harvest time is plentiful during the summer. This study findings also show that having a planting and harvesting schedule was paramount for the success of the farms. During the winter months, some small farm farmers go hunting. Hunting was another

way to generate income for the farms once the busy season was over. Kansas was named the leading agriculture state in the United States. They are known for growing wheat, cattle, corn and soybeans. Families depend on them to produce fresh fruits and vegetable. Farmers depend on them to purchase their crops and rely on them to harvest. Some small farm farmers indicated that making decisions and dealing with the positives and negatives of those decisions can make or break their farm operations. They concluded that most decisions are made on how to drive crop prices, sales locations, do they hire seasonal help to assist them, do they want to expand to different markets, do they want to focus on growing a specific crop or build new barns. All of these decisions are made under careful consideration not to negatively impact the farm's bottom line. Lowering produce price is another difficult decision farmers have to make depending on sales volume. The research subquestions below will demonstrate the results of my interviews.

Research Subquestion 1: What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

1. Small farm farmers experience farming operations as primarily family- and community-focused.
2. Small farm farming is complex, with a wide range of external factors that influence life, farming operations, and decision-making.
3. Small farm farmers do not typically view fellow farmers as competitors, but view them as a source of support and advice.

Research Subquestion 2: When confronted with change, how do you deal with difficult decisions?

1. Small farm farmers rely on fellow farmers for support and advice in order to make difficult decisions.
2. Small farm farmers rely on their established procedures within the farming operation to make difficult decisions.

Research Subquestion 3: How do you feel about the use of technology in managing your farm?

1. Small farm farmers see the value of incorporating technology, including e-commerce, in the management of their farming operations.
2. Small farm farmers who do not utilize e-commerce view it as impractical or non-applicable to their own operations.

Analysis of Research Subquestion 1

What is your lived experience as a small farm farmer in making decisions in managing your small farm operations? Among the interviews, one prominent theme was the complexity of small farm farming. Farming, particularly from a business standpoint, has a wide range of factors that must be managed by farmers. As a result, there are a wide range of factors considered by small farm farmers in the decision-making process for any and all decision-making. *Table 1* identifies the decision-making influences among the participants. All farmers identified multiple factors used to make decisions in regard to farming practices and operational strategies. This is frequently a

focus among farmers on small operations. According to an interview with Company AB, which does use e-commerce:

> Farming is a very highly complex business with a lot of moving parts. We look at everything from commodity markets to foreign exchange markets, how it affects our prices. The financial side of it is major to manage. I was hoping for years that someone would come out with a suite of tools that would allow us to manage our business electronically and not the manual ways it was being managed.

However, even farmers who are not involved in e-commerce recognize the complexity of farming, even on a small scale. According to the interview with Company TT, which does not use e-commerce:

> On a daily basis, we have to make decisions on the types of crops we will grow, when and who to sell them to. Timing is so important in farming. You always want to get your crops to the market first.

Some farmers understanding the complexity of operating a farm business mentioned that gaining farming education in paramount. They take enhancing their farming knowledge very seriously. Some small farm farmers, in an effort to improve their decision-making process, they attend different workshops and educational training program trainings to get the education they need to run a successful farm. Company FF, which use e-commerce explained:

> Farming can be difficult to manage if you do not know what you are doing physically and mentally. We have an apprenticeship in Indiana where we go for

> training because text book learning will not help with hands on experience in farming. The hands-on experience demonstrates how the soil should look and feel, when to water certain crops, how to care for Sheep and Goats and when to harvest.
>
> Company CC, which use e-commerce explained:
>
> From a farms perspective, most of our decision making revolve around problem detection, paying attention to other farms, customers need, and crop evaluation. Our decisions are made based on events, not the strenuous process of the work required. All decision making is in real time.
>
> Company SC, which does not use e-commerce explained:
>
> Time planning and record keeping spreadsheets are used to assist us with managing our farm operation efficiently. We use these tools to assist with crops planting and harvest scheduling. With these documents, we are able to display the farm's availability calendar that has the types of crops in process, when to sell to farmers markets, sales goals, and gross revenue.

In addition, Company XI, which does not use e-commerce, says:

> There is so much involved in farming that some people are not aware of. On a daily basis, we ensure that we are following our state and local laws [to] maintain our farm. We make decision[s] around the types of labels we place on our produce, pricing, storage, what we can and cannot sell. We have to ensure that

> customers who come on farm[s] have a restroom to use, handicap accessibility, etc. We remain aware of rule changes.

Labor seems to be a challenge for small farm farmers. According to several small farm farmers, it is difficult trying to get this modern age generation to lead or work on a farm. Finding good labor is a challenge. According to Company DFF, which use e-commerce:

> We cannot get steady reliable help to grow crops. We rely mostly on our machines. Young people shy away from farming. They do not understand the importance of it. Because of the intense labor, even older individuals seem to have issues sometime.
>
> Using machines help reduce our manual labor. We have machines that will plant and water the ground. We have machines that will help plow the soil. Our machines will also weed and lay out the land. Machines will help prepare the farm soil so we can sow the seed. We find that investing in machinery is a blessing, even though they are expensive, they are worth every penny in the long run. We hire contractor to work the farm.

Company AE explained:

> On a daily basis, we work with a sister company to help us manage our orders, changes to the products type and changes to our business processes. We find that having extra help makes working the farm so much easier. Having more help brings in more business and helps us to move products sooner.

> Not having the younger generation assist in farming is an issue we face daily. How do we get them interested in farming when other sprawl of technology and the attractiveness of other jobs are overshadowing the enjoyment of farming? If we do not find ways to stop larger farms from taking over, small farms like ourselves will go away.

Due to the complexity of farming, small farm farmers state that farming is not a typical nine-to-five career. There is always work to be done on the farm regardless of the time of year or crops being managed. According to Company TCS, which does use e-commerce:

> We work twelve-hour days, six days a week, and only pay myself enough to cover the necessary expenses such as food and utilities. Most days are long, drenched in sweat and dirty.

These complexities must be dealt with on a daily basis and require a set of skills beyond basic business and managerial skills, talent, and knowledge. There is a high need for clear strategies to manage the farming operation, but due to frequently changing conditions, there is also a strong need for adaptability. According to the interview with Company CC, which does use e-commerce:

> From a farms perspective, most of our decision-making revolves around problem detection, paying attention to other farms and customers' need, and evaluating crops. On a consistent basis we revisit our plans and readjust accordingly.

In addition, Company VSA, which uses e-commerce, stated:

> Decision-making is made mostly from experience, a hunch, and from our record-keeping. We meet with other farmers to discuss growth strategies, tips for growing certain products and selling techniques.

While there is data and analysis required in farming, which aligns with the business elements of farming, there is more to farming than the numbers and business. The career requires that farmers understand the dynamics of the land, the seasons, the weather, and other factors that contribute to the success or failure of crops and farming.

Another prominent component of the farming experience according to the interview is the strong sense of family and community that is part of the nature of the farming industry, particularly among small-scale farmers. Many small farm operations connect with their communities for greater success. According to the interview with Company DNN, which does use e-commerce:

> We allow the community to come on the farm to pick their produce and learn how the food grows. We teach people how to grow produce. This helps expand our market and it's an activity everyone enjoys. We use the website to post farming schedules and picking conditions. We also use the website to educate customers about farming and the benefits behind healthy living.

In addition, Company FF, which also uses e-commerce, stated:

> Our business model is Community Supported Agriculture Investment (CSAI). This is where we have individuals in the community become members and participate in the harvest. […] Another part of our lived experience is the concept

> of bartering. Because of the CSAI program, we also trade some of our goods with other farmers because they might have something that we don't and vice versa. This, too, helps build relationships, get the word out about our products, and help us live a healthy lifestyle.

Farming, particularly among small farm farmers, also includes a strong sense of family, with many farmers having passed the trade down through generations. Many small farm operations are family-owned and family-operated. According to Company WM, which does not use e-commerce:

> This is a family owned business […]. Family members handle farm operations on a daily basis.

On these farms, family members are typically actively involved in the operations of the farm as well as the decision-making processes throughout the operation. For many farmers, this makes the farming industry more personal for those involved. Farmers not only want to be successful for the financial and operational success, but because it is important to their families, as well.

From the perspective of existing research, the findings indicate an emphasis on external factors in the process of decision-making, which includes the land itself, weather, the needs of the community, and other similar factors. Secondary to external considerations are factors related to business, such as financial considerations, the organizational strategy, laws and regulations, and market trends. This shows that the focus of decision-making is on the farming aspect of farming operations and the business

components of operations is not as prevalent. This does not mean that small farm farmers do not find the business factors important, but the practice of farming is more important than the practice of business for these farmers. Since the primary gap in literature deals with a lack of knowledge about decision-making processes, this information is valuable to begin closing that gap. In table 2 is the factors that small farm farmers take into consideration prior to making the decision to adopt or not adopt e-commerce.

Table 2

Decision Making Factors

Decision-making factor	Number of farmers
Financial factors	7
Strategy/business plan/laws and regulations	20
External factors (environment, weather, community needs, etc.)	16
Competition	4
Education and market trends	7
Other factors	3

Analysis of Research Subquestion 2

When confronted with change, how do you deal with difficult decisions? As with general decision-making, there are a wide range of factors that contribute to the strategies used by small farm farmers when faced with difficult decisions. These factors can be found in *Table 2*. One source of support that a large number of farmers rely on is the farming community itself. That is, farmers turn to other farmers for support and answers when confronted with challenges or the need to make decisions. According to Company AE, which uses e-commerce:

> We rely on other farmers to help make decisions. We also rely on each other [husband and wife] to come up with the best solution. We visit other farms, speak to farm owners, travel from state to state to get ideas on how to make our farm better.

In addition, the sense of community in the farming industry contributes to the decision-making process. According to Company SC, which uses e-commerce:

> Our final decision is always based on what our competitors are doing, what the customer needs are, is what we're doing cost effective, how is other farming managing, what decisions were made by other farmers, what does the university have to say about this issue, is this a big enough issue to discuss in our CSAI forum? We get help from many sources before a decision is made.

Along the same lines, Company TT, which does not use e-commerce, states:

> We work through our changes by strategizing and conversing with other farmers. We also plan in advance for issues we can see and any unforeseen issues we manage those as they come. We depend on other farmers to help us.

However, since farms are businesses, they often require business thinking to solve problems or overcome challenges. According to Company DLC, which does use e-commerce:

> […]. Most decisions for us are not difficult. They are more around making the best decision for the farm. Some decisions are made around equipment. What

> equipment is best and will last longer and yield us more income and less time. We apply good business sense to the concept of sowing and reaping.

For this reason, many farmers implement procedures and processes that can be followed for decision-making. These processes and procedures help streamline the decision-making process and give the farmers a method for addressing challenges they encounter. In addition, many participants indicated that, as family-operated businesses, they rely on the family to make decisions and meet challenges. This occurs in other business fields, as well; organizations seek input from stakeholders in decision-making in order to ensure that the decisions made are in the best interests of the stakeholders.

As with the decision-making process, findings indicate that farming is more important than business in determining the best strategies to deal with difficult decisions. As a result, farmers rely on support from fellow farmers and organizations as well as an analysis of how decisions will impact the farm and its operations in order to make difficult decisions. This also helps to close the gap in current research, providing insights into the ways small farm farmers make decisions. This, paired with insights into the factors that influence small farm farmers' decision-making, can be used to understand the intersection between the practice of farming and the business of decision-making in operations. Table 3 consist of strategies small farm farmers use when faced with making difficult decisions.

Table 3

Strategies for Addressing Difficult Decision Making Among Small Farm Farmers

Decision-making factor	Number of farmers
Operational procedures	6
Fellow farmers/outside support	8
Impact analysis	8
Financial impact	2
Market analysis	1
Knowledge/experience	4
Other	4

Analysis of Research Subquestion 3

How do you feel about the use of technology in managing your farm?

Though not all participants use e-commerce, they all had clear opinions about the use of technology in facilitation of farming management. Overall, the responses to this question were either positive perceptions or negative perceptions, as expected. The ratio of e-commerce users to non-e-commerce users can be found in *Figure 1*.

Among participants who responded positively, many expressed the need for technology in order to be successful in the future of farming. Company AB, which uses e-commerce, stated:

> Look at what is going on worldwide; some projections show that there will be nine billion people in the world by 2050. based on data from the Food and Agriculture organization, we would need about a seventy percent increase in food production to feed all of those people. Based on that alone we know that we have to plan, grow, harvest, and distribute more efficiently. Technology is a way to do that.

Along similar lines, Company SC, which does use e-commerce, stated:

> Technology is wonderful. We are able to produce more, hire more people, take better care of the farm more efficiently, oversee the crops from a headquarters, and the list goes on. We are not as organic as we would like to be but our produce is fresh. Technology allows us to be able to shop overseas, accepts orders online and research different markets.

Those who advocate for the use of technology see the benefits it brings to farming from a business perspective through more efficient management and organization. This results in reduction of costs, improved production, and greater profitability on the farms. According to Company DNN:

> Technology is great. Have a mixture of farm technology and manual labor provide the full experience for a farmer. We use the internet, but for minor advertising and educating. We use farm equipment to help with planting, watering and sometimes harvesting depending on the crop. Technology helps us focus on the farm produce more, but it gives us the opportunity to spend more time on managing the operation of the farm.

Since small farms are not typically profitable, this is highly beneficial. The internet helps automate operations so that farmers can more effectively prioritize their time and efforts for the benefit of the farm and its success.

Not all small-scale farmers are advocates for the application of technology in farming management. According to Company WM, for example:

> Technology is very time consuming and expensive. […] It would be good to have the latest and greatest technologies like a larger farm does, but financially this farm cannot afford to purchase them, nor can we afford the upkeep.

Some farmers do not see a need to implement technology in their farming operations, particularly beyond the basic equipment technologies used in the operations of the farm. According to Company TLC, which does not use e-commerce:

> Technology is always great. Bigger is not always better, but in our case we only need the farm equipment's help to plant and harvest to be able to meet the demand of our products.

However, even farmers who see the benefits of implementing technology into their operations recognize that there are downsides, as well. Company IS, which does not use e-commerce, stated:

> I like the ability to use a more organized managing operating software to assist with inventory, income, expenses and track orders. I like having the tractors to plow the soil and the ability to help plant seed. Those types of technology [are] great and allows us to focus a lot more of our time on strategy. The downfall is not being able to afford the latest and greatest machinery to do double the output.

In addition, some small-scale farmers view the application of technology as a way to expand. Therefore, if they do not want to expand, they do not see the need to implement technology, particularly because the expansion in income would be required to maintain the technology once it has been implemented.

Another consideration for small-scale farming is access to technology. Some rural communities do not have reliable internet access. Company TT explained:

> Live in an area where internet is not possible. We are in the country and so I can use internet to see my product. I would love to but it's not possible.

It is important to note that most farmers do not equate technology and e-commerce as one idea. Small-scale farmers recognize that technology can be implemented in farming without the application of e-commerce. As a result, even farmers who do not use e-commerce still implement technological solutions to manage their farming, improve and streamline operations, and result in improved farming outcomes for the farmers.

While the decisions to use or not use e-commerce appears to be roughly even among the participants, it is important to note the context of this decision within the findings regarding decision-making. Therefore, the decision to use or not use e-commerce was based on a wide range of factors, such as the needs of the community, and the decision was made using a number of strategies, including an impact analysis or by seeking insights from fellow farmers. Therefore, the findings from the research provides a better understanding of the rationale behind the utilization of e-commerce or lack of utilization of e-commerce. This understanding can be used to bridge the gap in current research, particularly as technology and e-commerce become more fully integrated into all areas of business, including farming operations, even among small farm farmers.

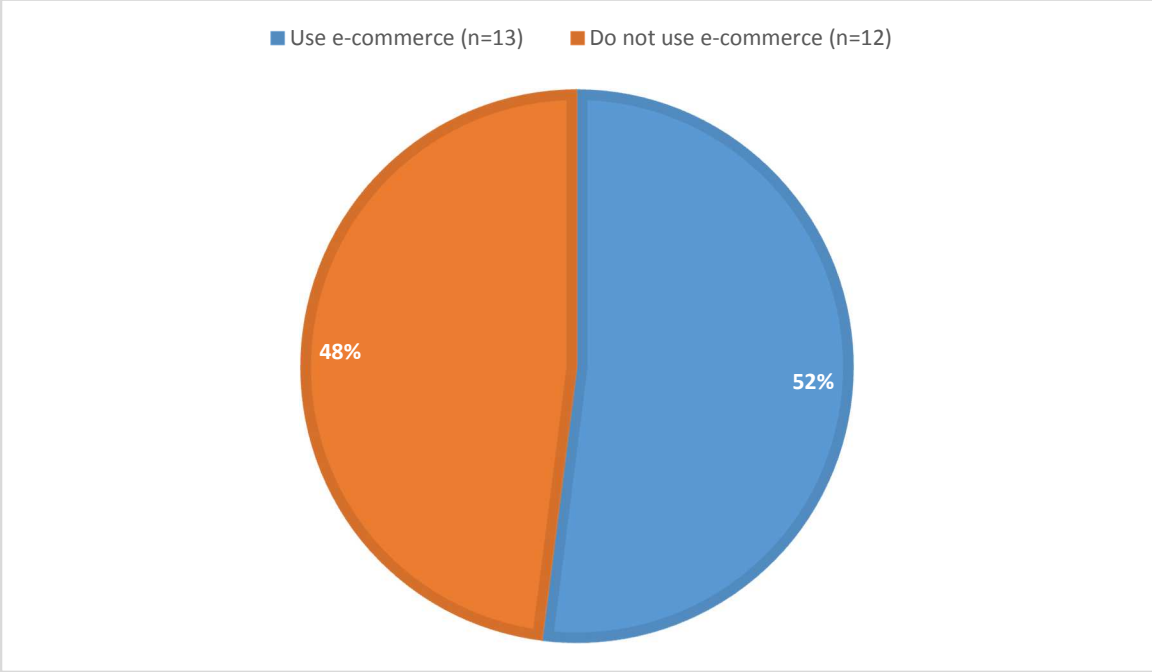

Figure 2. Use of e-commerce among small farm farmers.

Evidence of Trustworthiness

The elements of trustworthiness that needed to be addressed in this research project were credibility, transferability, dependability, and conformability. According to Coast & Horrocks, (2010) these four elements are used to assess validity in qualitative studies, which is necessary for academic rigor in research and influences the applicability of the results to the existing body of knowledge. These aspects of trustworthiness were addressed as follows.

According to Borrego et al. (2011) credibility signifies the accurate reporting and documentation of the study results. To ensure credibility in this study, each interview session was written and audio recorded. During the member checking process, each participant had the opportunity to review his or her responses and provided additional

feedback or clarity to each question. This ensured that the participant was satisfied with the representation of the responses in the research project.

Transferability is another means to ensure validity. Transferability is the process by which the results of this study can either be transferred to other settings or contents, or where they can be applicable to similar situations (Beverland et al., 2010). To create transferability, this study included small farm owners and managers from two regions. For this study, transferability was achieved through the variation of small farm owners, managers and the regions they were selected from. The results of this study may be transferable to other small farm owners and managers in other regions. However, while the results may be applicable to each region, additional research would be needed to determine the applicability of the conclusions on a larger scale.

Dependability is the third element of trustworthiness in a qualitative study. It addresses the permanency, accuracy, and consistency of the research inquiry processes over time (Beverland et al., 2010). Dependability was established through careful documentation of observations and keeping notes about any responses or situations that change over the course of the research project. Data triangulation helped to achieve dependability. The collection and validation of data gathered through interviews and documentation of field notes from small farm owners and managers in two regions contributed to data triangulation.

Conformability is the fourth element used to address trustworthiness in a study. According to Beverland et al. (2010) conformability is the process by which the study

results produced by the researcher are able to be confirmed by others. The results documented by the researcher should be the intended interpretation messages conveyed by participants, as opposed to researcher bias. Another means of ensuring conformability is through member checking. Member checking is the process that allows the researcher to validate the information gathered during the interview process. Conformability was established through support from current literature as well as documentation of data analysis procedures to ensure that the data has been checked sufficiently.

Summary

This chapter examined the results of the in-person interviews with small farm farmers, focusing on three semi-structured interview questions examining farmers' perceptions of the application of technology in farming. The responses to these questions show the diversity in experiences among small-scale farmers in the United States, which may influence the ability or willingness for small farm farmers to implement technological solutions into their farming management and operations. In addition, though not all farmers have implemented e-commerce, the majority of participant see and accept the value of technology for farmers in some capacity, including its value for the future for the farming industry. From a demographic perspective, there is no statistic difference between genders as to utilization of non-utilization of e-commerce. However, there is a clear trend in age groups, with younger farmers being more likely to utilize e-commerce than older farmers, even within the primary age range of participants between the age of forty and sixty. This aligns with the conclusions drawn in the literature review

in that farmers' decisions to utilize e-commerce are primarily founded in their understanding of e-commerce as a method by which they can expand their farming enterprises. However, older farmers, such as those nearing, at, or past retirement age, are less likely to need to expand their enterprises and may be thinking instead about strategies for succession planning. The next chapter discusses these results within the context of the primary research question as well as the conceptual framework developed for this research project.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

My focus, in conducting this research study, was on exploring the use of e-commerce and other technological solutions among small farm farmers in the states Kansas and Missouri in the United States. Technology permeates every aspect of today's society, which includes the farming industry. According to Kingwell (2002) technology permeates family lives, including business, the home, and industry. However, small farm farming appears to lag behind the overall farming industry, as well as business in general, in the use of e-commerce (Kingwell, 2002). It is this area that is in need of research so that the rationale behind these farmers' adoption or non-adoption of e-commerce can be understood. Greater understanding of the factors accounting for small farm farmers' operations and decision-making can help farmers in their decision-making processes, including choosing the best applications of technology and e-commerce for use in their farming operations .

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision making in managing farm operations through use of the Miles and Snow (Miles et al., 1978) typology of strategic management. Also, I addressed the gap in the literature related to the use of e-commerce and small farm operations. This study was intended to add to the existing literature more understanding of farmers' decision-making processes when it comes to e-commerce and managing their farm

operations. In Chapter 5, I interpret the results of my interviews with participants within the context of the small-scale farming industry in the United States.

The results from this study do not have broad implications for the farming industry due to the small sample size. However, there is a gap in the literature related to strategies used by farmers in the adoption or non-adoption of e-commerce. This research project begins to bridge that gap, creating a foundation on which future research can be built. At this time, the results by themselves do not have implications for farming practice. Further research is needed for the practical application of the results in farming strategy and management. The overarching research question for this study is as follows: What are the lived experiences of farmers in Kansas and Missouri in making decisions in managing small farm operations? In addition to this question, three primary semistructured questions were used to gain a deeper understanding of the use of e-commerce among small farming operations in the United States. These semistructured interview questions were:

Question 1: What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

Question 2: When confronted with change, how do you deal with difficult decisions?

Question 3: How do you feel about the use of technology in managing your farm?

These questions, along with the primary research question, these three questions are used to examine the results and draw conclusions on the topic of e-commerce in small farm operations in the United States.

Interpretation of Findings

I have grouped discussion of findings into three subsections: lived experiences, difficult decisions, and technology use. Each subsection includes a summary of my interpretation of findings regarding small farm farmers' viewpoints on decision making and managing their farm operations.

Lived Experiences

Within the context of farmers' lived experiences, the study indicates that the sense of community within small farm farming is beneficial as a source of support and that the overall experience is highly complex. As a result, it is clear that the decision to use or not use e-commerce in small farming operations requires considerations beyond the implications of e-commerce utilization for the business aspects of the operations. The findings from this research study can be used to understand the complexities of small farm farming operations as a foundation for decision-making. Therefore, small farm farmers must balance the external factors of farming, such as the weather, with internal factors, such as streamlining the business side of operations, in order to determine whether or not to use e-commerce. According to my analysis e-commerce vendors need to provide solutions that blend these complex factors so that small farm farmers can find solutions that address all their needs.

From the perspective of existing research, the findings indicate an emphasis on external factors that can contribute to small farm farmers in the process of decision-making, which includes the land itself, the weather, the needs of the community, and other similar factors. Secondary to external considerations are factors related to business, such as financial considerations, organizational strategy, laws and regulations, and market trends. These factors show that the focus of decision-making for small farm farmers are on the farming aspect of farming operations while the business components of operations are not as prevalent. This does not mean that small farm farmers find business factors to be unimportant, but that the practice of farming is more important than the practice of business for these farmers. The primary gap in the literature on small farm farmers concerns a lack of knowledge about decision-making processes; thus, this information is valuable as a way to begin closing that gap.

Difficult Decisions

Findings from this study indicated that small farm farmers frequently rely on other farmers to make difficult decisions. It is for this reason, at least in part, that small farm farmers do not utilize e-commerce solutions as frequently as in other industries. If small farm farmers find that their colleagues are not utilizing e-commerce, they may be less likely to adopt it themselves. This information has implications for small farm farming in that farmers can identify the trends of e-commerce utilization based on their region and fellow farmers. That is, if few farmers utilize e-commerce on their farms, it may be that this trend continues due to the reliance on other farmers to help make

decisions. This recognition can then be placed within the context of small farm farmers' operational needs in order to develop an effective decision about e-commerce. E-commerce vendors can use this information to increase the likelihood of e-commerce adoption by small farm farmers. Swaying the decisions of some small farm farmers toward the use of e-commerce may result in other farmers also adopting e-commerce.

As with the decision-making process, findings indicate that farming is more important than business in determining the best strategies to use with difficult decisions. As a result, farmers rely on support from fellow farmers and organizations as well as an analysis of how decisions will impact the farm and its operations in order to make difficult decisions. This also helps to close the gap in current research by providing insights into the ways that small farm farmers make decisions. This knowledge, paired with insights into the factors that influence small farm farmers' decision-making, can be used to understand the intersection between the practice of farming and the business of decision-making in operations.

Technology Use

The most significant implication from the study is in the context of small farm farmers' views of the use of information technology in farming operations. The majority of farmers recognize the value of information technology solutions in their farming operations, including in the use of e-commerce. Despite this recognition, many farmers assert that the implementation of e-commerce is either not practical or does not apply to their farming operations. Since small farm farmers have complex factors they use to

make decisions and run their operations, they must carefully consider these factors in balance with the costs and effort of implementation and maintenance of e-commerce. In other words, the implementation must be worth it to their operations. The results of this study can be used to further highlight the benefits of technology in comparison to the rationale used in decision-making to encourage small farm farmers to implement e-commerce and other information technology solutions. The benefits of e-commerce can be viewed through the perspective of the business aspects of farming operations, while the decision-making processes are viewed through the perspective of the social aspects of farming operations in the reliance on insights from fellow farmers. Therefore, farmers who want to utilize better business practices to benefit their operations can use this information to focus more effectively on the business rationale for implementing or not implementing e-commerce and other information technology practices in their farming operations.

While the decisions to use or not use e-commerce appears to be roughly even among the participants, it is important to note the context of this decision within the findings regarding decision-making. Therefore, the decision to use or not use e-commerce was based on a wide range of factors, such as the needs of the community, and the decision was made using a number of strategies, including an impact analysis or by seeking insights from fellow farmers. Therefore, the findings from the research provides a better understanding of the rationale behind the utilization of e-commerce or lack of utilization of e-commerce. This understanding can be used to bridge the gap in

current research, particularly as technology and e-commerce become more fully integrated into all areas of business, including farming operations, even among small farm farmers.

Limitations of the Study

Though this research project is beneficial to the field of farming, there are limitations that must be addressed. One limitation of this project is the small number of participants. While this sample size was effective for the qualitative data collected and analyzed, the small participant pool limits the applicability of the results on a broader scale in the farming industry. This is also true because of the geographic limitations. The participants were drawn from only two states – Kansas and Missouri – despite farming taking place all over the nation. The responses by the participants may not be accurate for small farm farmers in other states. Another limitation of the research project is the focus on e-commerce as an avenue of technology utilization among small farm farmers. The results indicated that many small farm farmers who do not use e-commerce apply technology in other areas of farming operations. This highlights the diversity of technology and its applications in farming operations. However, this diversity is not addressed in this research project, which may provide limited the understanding of technology utilization in small farm farming. Many farmers indicated that, while they do not participate in e-commerce, they use technology in equipment as well as maintaining websites and social media pages as part of marketing and operations.

Discussion

The overall experiences of farmers of small farms focus on a great deal of work with great diversity in daily operations, including farming responsibilities and business responsibilities. However, there is also a strong sense of family and community in the farming industry, both in seeking support for strategies and operations as well as in decision-making for farmers. While some participants addressed the application of technology in their daily experiences, there was a stronger focus on community and family as well as using strategies adaptable to the changing needs of customers as well as navigating the complexities of farming, including adapting to the weather and other forces outside of the farmers' control. This highlights the role of traditional aspects of farming in the industry and business of farming despite the integration of technology in every aspect of life and society. Since small farm farmers continue to rely on more traditional elements of farming rather than focusing on technological innovations in equipment and automation, they do not value technological implementation, including e-commerce, in the same way larger-scale farming operations do. They may benefit from technology, but do not see it as essential. Instead, small farm farmers value the traditions and community of farming and only implement technology and innovation when it is not only cost-effective, but has clear benefits for their specific farming operations and needs of the stakeholders. That is, small farm farmers are not likely to be early adopters of technology or technological solutions, instead relying on proven methods and best practices that they know to be valuable and effective for their purposes. Despite the clear

differences in farming operations and business operations on farms, small farm farmers handle business-related decision-making the same way they handle farming-related decision-making.

The sense of community is valuable to farmers when they face challenges and difficult decisions, providing support and insights so that the decision made is in the best interests of the farm. When farmers face challenges or decisions, they turn to fellow farmers to determine the best course of action for their farms based on what other farmers have done successfully or unsuccessfully. Rather than viewing fellow farmers as competition, there is a greater sense that they are colleagues and part of a community. Along with relying on other farmers for insights and support, many small farms are family-owned and family-operated, which means that farming-related decisions and challenges are approached as family-based decisions. It should also be noted that many small farm farmers develop specific procedures and processes through which they can make decisions and overcome challenges. These procedures provide a framework through challenges can be overcome for the best interests of the farming operation and its stakeholders. This reinforces the conclusion that small farm farmers rely on the traditional perceptions and frameworks of farming to guide their decision-making. Farming is a community-focused industry, and despite small farm farmers being competition to each other, they continue to rely on one another for support and advice in decision-making. Even in the face of increasing competition in the farming industry from large-scale and industrialized farming operations, small farm farmers focus on

community and family in decision-making processes. The processes and procedures used by small farm farmers have been proven successful, so the farmers do not feel the need to change these procedures and implement technological innovations, even if large-scale farming operations are utilizing more integrated technological initiatives to automate operations and achieve success.

Finally, small farm farmers have clear opinions about the application of technology in their farming operations and management. Advocates of technology recognize the benefits that come from its use, even if they do not use e-commerce. Though technology is an investment, these farmers are willing to invest in technological solutions for the positive benefits it brings to operations, particularly when a farming operation has the desire to expand and grow. In addition, advocates of technology recognize that it is being implemented more fully into society as a whole, including farming. Therefore, they view the increasing use of technology as an inevitability, so there is no point in fighting its implementation in farming operations and management. This is not a universal perception among small farm farmers in the United States. There are farmers who are suspicious of the implementation of technology or simply do not see the need for it. This perception is in alignment with their decision-making. Farmers rely on methods that have been proven effective in their own experiences and throughout the community. There is no need or desire to change methodology when the existing methodology has proven successful. Barriers to the application of technology include the perceived expense of implementation and maintenance as well as the ability to utilize the

internet in rural geographic regions. Small-scale farming operations do not have the capital through which they can establish technological solutions into operations, particularly if they do not have technology initiatives already in place within their operations. This can be even more expensive an investment in rural areas that do not have easy access to the internet or other resources to implement technological solutions. In addition, it should be noted that many small farm famers apply technology solutions to farming operations and management that do not include e-commerce and the internet, such as technologically-advanced equipment to help with the physical farming. Therefore, it is clear that the perceptions of technology and e-commerce among small farm farmers is mixed, particularly depending on the needs of the farmer, the customers, and external factors that influence farming success or failure.

Alignment of Conceptual Framework

Miles and Snow typology is the underlying concept for this study (Miles et al., 1978). The four strategies described by Miles and Snow can be used as a framework through which to model and understand small farm farmers management decision regarding the adoption or non-adoption of Information Communication Technology and e-commerce as part of their farm business (Miles et al., 1978). The four types of activities the typology characterized are Defenders, Responders, Analyzers, and Prospectors. The Defenders are companies that pursue a fixed strategy, and that take few, if any, risks in the marketplace; the goal of the Defender is mere to maintain its position. The Responders react to market development by changing their strategies, but only in limited

ways. The Analyzers are strategically adventurous; they expand into new markets and take risks, but only in a manner that builds on their existing competencies. Finally, the most strategically creative companies are Prospectors; they launch into entirely new markets and take significant risks. The benefit of utilizing these concepts is that they permit American small farm farmers to view their business environment in different ways, influencing them to adopt different management strategies, and gain a competitive advantage over their competitors.

Technology adoption is one of the most complex topics in business literature, representing the nexus of many competing explanations and ideas. According to one view, people make technology adoption decisions in idealized free-market conditions posted by neoclassical economists (Bojnec & Latruffe, 2013). Individuals or those in management positions may be the key decision-makers regarding technology adoption, or technology adoption may take place within larger social groups, including families and neighborhoods. Regardless of whether individuals or social groups make the decisions to adopt to technology, there is a question as to the extent to which the individuals make the decisions freely to adopt or not adopt without any influence from others. These decisions may represent a rational process of need articulation and utility maximization, or they may be determined by social pressures, infrastructure, government coercion, and advertising.

Within the context of this research project, the four types of activities in the Miles and Snow typology can be aligned with age groups within the results. Within the results,

the Defenders are the older farmers who are less likely to adopt e-commerce. They have established their strategies based on experience and do not waver from it. The Responders are those in the middle of the age range of participants; they are more open to adopting e-commerce, but their adoption is based on their recognition of changes in the farming industry toward greater implementation of technology. To that end, they are likely to adopt e-commerce only so far as it would benefit their farming operations, such as in the context of expansion. They are not likely to implement e-commerce for the sake of technological advancement. Even those who have implemented e-commerce utilize technology either to expand operations or out of the changing needs of customers, which signifies a response to changing dynamics rather than a proactive stance on technology.

However, it should be noted that, overall, there are no Prospectors or Analyzers among the participant pool. The participants indicated their reliance on experience and proven methods for farming management and operations. As a result, the industry is not such that farming operations are innovative or early-adopters of technological solutions. Instead, they are more likely to lag behind in technological solutions, which results in Responders and Defenders. It may be that, as older farmers retire and small operations are passed to younger generations, this mentality will change. Younger farmers may understand the need for greater technological integration, which will increase the likelihood that they will be more adventurous and innovative in the adoption of technological solutions and strategies, resulting in an increasing number of small farm

farmers who fall into the categories of Analyzers and Prospectors. It would be beneficial to conduct further research to determine whether this is true.

Study Findings and Relation to the Literature

A literature review was provided in Chapter 2 regarding small farm farmers decisions to adopt or not adopt Information Communication Technology (ICT) and e-commerce in the United States. The study results revealed that small farm farmers recognized that ICT has a positive impact on farms productivity, income, and growth. However, some small farm farmers were reluctant to adapt to advance technology due to expenditure, location and farm size.

The response to the questions asked to the participants showed the diversity in experiences and age among small-scale farmers in the United States, which influenced the ability or willingness for small farm farmers to implement technological solutions into their farming management and operations. In addition, though not all farmers have implemented e-commerce, the majority of participants see and accept the value of technology for farmers in some capacity, including its value for the future for the farming industry.

This study results confirmed that some small farm farmers are not satisfied without having any ability to expand into new markets, nor are they satisfied with working in an unpleasant work environment on a daily basis. They prefer having the options to explore larger markets, increase productivity and create efficiencies within the workplace (Herzberg,1993). Some farmers responses also showed that having e-

commerce connects them with sellers outside of their geographical area providing the opportunity to acquire new customers and expand their territory. This confirms the conclusion of Whitacre et al. (2014), who discovered that e-commerce in agriculture, can connect sellers with buyers outside of the geographical vicinity or the known circle of customers.

Several farmers expressed that using social media is a unique way for targeting certain demographics of customers to educate and sell new products. Some farmers also indicated that catering to a specific set of buyers give them the opportunity to control their prices to guarantee a profit. According to Whitacre et al. (2014), individual e-commerce sites administered through individual farming concerns have the potential to build private spot markets, which are markets that sell particular crops to invited bidders for certain kind of crops. According to Machfud and Kartiwi (2013), e-commerce can moderate price fluctuations by allowing buyers to find new markets and enabling buyers and sellers to negotiate longer time contracts. All of these themes in the literature supported the idea that economic rationalism remains a robust frame through which to understand farmers' e-commerce adoption decisions.

Based on the findings of my study, small farm farmers indicated that when making decisions around farm operations, many factors are considered. Factors include farm size, demand for crops, the different seasons, income history, community involvement, and resources availability to assist with both planting and reaping. The participants who use e-commerce to assist with their farm operations confirmed that cost

is the number one determining factor, and has to be justified prior to making any decisions. Some participants also confirmed that family history also influence their rational for adopting e-commerce. Research supports the farmers' response by stating that there may be sentimental or social reasons individuals are farmers, but for the farming to be sustainable as a business, they must treat the farm as a business first.

An examination of the use of e-commerce by small farm farmers reflected that e-commerce penetration on these farms was rare because farmers were busy or intimidated (Machfud & Kartiwi, 2013). Actually, the opposite occurred. My study's findings revealed that small farm farmers who did not take advantage of e-commerce did not perceive a use for it. The farms operations were small enough to manage without e-commerce therefore, e-commerce was not worth the investment. Most of the small farm farmers advertised their products at community fairs, farm events, or during their time at the farmers market. Some small farm farmers relied on their customers to spread the word about their produce. This is one of the most common and success ways of gaining new customers.

The study results also confirmed that from a rational point of view, small farm farmers adopt e-commerce strategies to benefit the business aspects of farming. They can achieve greater reach and make business connections outside of their immediate communities. In some cases, adopting e-commerce strategies comes with economic incentives that benefit the farm and its business. Rational reasoning in the adoption of e-commerce is rooted in the business, which requires rationalism to be successful.

According to Blackmore & Nesbitt (2013), another factor in e-commerce adoption is the overall strategy of the small farm farmers. It is in this capacity that the Miles and Snow typology was applied to decision-making rational for small farm farmers. Typically, small- and medium-sized business owners, such as small farm farmers, employ a little growth strategy. Under the Miles and Snow typology, this places them as reactors or analyzers, which are not dynamic models of business strategy, and leads to a minimal emphasis on adopting new e-commerce or technologies (Miles et al., 1978). Since these farmers are not trying to grow their farming operations, there is a reduced need to take risks, such as adopting new technologies or utilizing e-commerce.

This study findings uncovered a few business models that small farm farmers use to enhance their daily farm operations. One model in particular is the Community Supported Agriculture Investment (CSAI). This model allows the farmers to create a special program to invite community individuals to become yearly members and to participate in the harvest. This model allows individuals to purchase a membership package ahead of season for the year. The membership prices varied based on the type of produce available, the amount of produce needed, and the frequency of delivery. According to the interviewers who use this model, designing a model like this ensures steady income and minimal produce waste. When crops were ready to be harvest, the small farm farmers placed an announcement in the local papers, flyers in the library and throughout the community, created Facebook live videos and for those who used the website for sales, they added a small advertisement on their website. The interviewers

stated that using the CSAI model helped reduce waste, provides a steady source of income, and fosters community involvement.

Woosegung & Klein (2011) argued that for years now small farm farmers' have been under pressure to compete to produce quantity at an economical price. Woosegung and Klein suggested that one solution to these e-commerce demands was for small farms to make their supply chains more efficient using e-commerce technology to (a) sell directly to consumers and (b) small aggregate farm produce sales in the form of multi-farm cooperatives. The study results showed that small farm farmers who use e-commerce target specific groups of individuals, organizations and restaurants to sell their products in bulk. Selling in bulk ensure products will be sold and income was guaranteed. Some small farmers postulated that given the demand for fresh products, selling directly to consumers' increases the farms visibility and improves consumers' health.

Briggeman and Whitacre (2010) conducted a more recent survey of small American farmers' Internet use that is more directly relevant to the current study. Briggeman and Whitacre (2010) discovered that the smallest farms tended to have lower levels of website ownership than larger farms, suggesting that smaller farms are not taking the lead in selling their crops via their websites. My study findings support this discovery. Most small farm farmers communicated that the most efficient ways to sell their products was not on the website, but to the surrounding communities. Participants of the study also suggested that having a website provides an opportunity for them to

connect with other farmers to either barter or just to observe what customers are purchasing. They use the website tool more for research than to sell crops.

According to Ellram and Cooper (2014), the success of e-commerce as a sales channel is not necessarily about the success of individual farmers and their processes, but about an entire supply chain. For small farmers to believe that e-commerce will be a profitable sales channel for them, they also need to believe in the integrity of their sales execution, escrow, and logistics systems. The study findings showed that e-commerce is adopted as a sales tool when farmers believe it is likely to profit them. In addition, the findings revealed that each farmer values their produce by carefully monitoring the quality and volume of produce being distributed from their farms, and by soliciting feedback from community participants to improve customer experience. Even when a decision was made to adopt to e-commerce, small farm farmers also took in consideration the complexity of selling online, as well as the effort it took to maintain their online presence.

Recommendations for Future Research

This research project was intended to bridge an existing gap in current literature. While the research did provide insights into the behavior and decision-making of small farm farmers in regard to the use or non-use of e-commerce, the variation in the responses suggests that there are no clear trends in the use or non-use of e-commerce among these farmers. Therefore, there are many aspects of this topic that are in need of further research. It is recommended that future research expand the geographic region

from which participants are drawn, including a larger participation pool, to increase the likelihood that the results can be applied to farming on a broader scale. It is also recommended that future research broaden the scope of technological solutions examined in research beyond exclusively e-commerce. In addition, it is clear that there is a correlation between e-commerce adoption and age. However, the age range of the participants is somewhat narrow, with the youngest participant being 35 and the oldest being over the age of eighty. It would be beneficial to examine the relationship between age and e-commerce adoption among a wider age range of participants to further analyze this correlation and draw further conclusions about e-commerce utilization among small farm farmers.

Understanding farmers' decision-making in various aspects of technology can provide more comprehensive insights into small farm farming, decision-making, and the role of technology in the farming industry. The results indicate diversity in the factors contributing to decision-making and the strategies used to make decisions. Therefore, as research progresses, it should address these specific factors to strengthen the understanding of decision-making within the context of technology utilization and e-commerce use among small farm farmers. The findings indicate that the farming aspects of decision-making are more significant for small farm farmers. This suggests that, among those who do not use e-commerce, it was determined that the use of e-commerce is not advantageous to farming operations. Therefore, future research should examine the correlation between e-commerce and small farm farming, with a particular emphasis on

the positive and negative implications of its use for farms of this size, particularly within the context of the current farming market and changes in the use of technology in today's society. This research would provide the ability to implement practical applications of the intersection between small farm farming and e-commerce utilization, such as the ability to design specific e-commerce technologies to meet the unique needs of small farm farming or to design a marketing approach that addresses the decision-making processes of small farm farmers.

Conclusion

The purpose of this transcendental phenomenological study was to explore U.S. small farm farmers' decision-making in managing farm operations as understood through the Miles and Snow typology of strategic management. Specifically, the study focused on the use or non-use of e-commerce by participants in Kansas and Missouri. Through the data collection and analysis, it was found that, while there is no statistical difference in e-commerce adoption and non-adoption between the genders, there is a notable difference in e-commerce adoption practices within age groups, with older farmers less likely to implement e-commerce practices. This suggests that, as later generation farmers take over small farm farming operations from their elders, there will be a trend toward greater utilization of e-commerce for farming operations management in the United States. The increased use of e-commerce in farming operations will change the way farms operate, and may change the way farmers interact with one another due to the increased accessibility of information and support through technology. It is hoped that future

research will provide further insights into the use and non-use of e-commerce among small farm farmers to facilitate the development of more effective best practices for farming operations in an age of technology.

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Appendix A: Solicitation Letter

Invitation to participate in the research project titled: "Small Farm Management of Information Communication Technology, E-Commerce, and Organization Performance"

Dear Potential Participant:

I am conducting interviews as part of a research study to increase an understanding of small farmers in the United States lived experience, and how they use or not use e-commerce in managing their farm operations. As an owner or a manager, you are in an ideal position to give your valuable and insightful views from your own perspective of small farm operations and the benefits and challenges faced on a daily basis. For my study, I am seeking study participants that are owners and managers who currently work on the farm.

The interview will take approximately one hour and will be very informal. My goal is to capture your thoughts and perspectives on how you manger your farm operation, and your rational for the use or non-use of e-commerce. All of your responses to the questions will be kept confidential. Each interviewee will be assigned a participant number to help ensure that participant personal identifiers are not revealed. At no time during the data analysis or study findings will actual participant identifiers be revealed. The study is voluntary and there is no compensation for participating in the study.

There is a limited number of studies on small farm farmer and their use or non-use of e-commerce in managing farm operations, hence the need for this study. Therefore, your participation will be a valuable addition to the field of small farmers research. The findings from the study could lead to greater understanding of how small farm farmers use or not use
e-commerce in managing their farm operations.

If you would like to participate in the study, please suggest a day, time and place for an interview that works best for you and I will do my best to be available.

Thank you,

Shenique Carmichael

Appendix B: Demographics Questionnaire

Small Farm Farmers Demographics Questionnaire

Name: _____

1. Education Level
   - Less than High School
   - High School
   - Associate Degree
   - Bachelor Degree
   - Graduate Degree

2. Do you have a computer?
   - Yes
   - No

3. How many?
   - 0-1
   - 2-3
   - 4-6
   - Other

4. Who uses it? For what purpose?
   - Manager
   - Employee
   - Family
   - Other_____

5. Are you satisfied with the performance?
   - Yes
   - No

6. Do you have internet connection? If yes, what types?
   - Yes
   - No

7. How long have you been using the internet?
   - Never used it
   - Less than a year

- 12 months to 3 years
- 4 years or more

8. How often do you access the web to search for products?
   - Daily
   - Weekly
   - Monthly
   - Never

9. Tell me about your farm.

   How long have you had it?_____

   What kind of farm is it?_____

10. What is the size of your farm?
    - Less than 10 acres
    - 20 -50 acres
    - 50-100 acres
    - Other_____

11. Do you live on your farm?
    - Yes
    - No

12. How long have you been a farmer?
    - Less than a year
    - 12 months to 3 years
    - 4 years to 6 years
    - 7 years or more

13. What made you want to be a farmer?_____

14. What do you like about farming? Why?_____

15. What do you dislike about farming?
    Why?_____

16. Do you buy or sell your products on the internet? If No, why not?
    - Yes
    - No

17. What barrier considered that would inhibit you from selling your products online?
    - Cost
    - Time
    - Marketing abilities
    - Not interested

Other_____

18. What factors contribute to the success of your farm business?
    - Timing
    - Products
    - Location
    - Other_____

19. What marketing advertising tools do you use for your farm business?
    - Direct Mail
    - Farmers Market
    - Neighbors
    - News Paper
    - Other_____

20. Do you plan to expand your farming business over the next 3 years? If yes, How? If No, Why Not?
    - Yes
    - No

21. What decision making role do you play when it comes to purchasing hardware or software for your farm business?
    - I make the final decision
    - I have some influence on what is purchased
    - I have little input on what is purchased
    - No input at all

22. Are you concern about the future of your farming business success? If yes? Why?
    - Yes
    - No

23. How open are you to obtaining updates on new marketing strategies?
    - Very open
    - Somewhat open
    - Not interested

Appendix C: Confidentiality Agreement

Confidentiality Agreement

Name of Signer:

During the course of my activity in collecting data for the research project titled: "***Small Farm Management of Information Communication Technology, E-Commerce, and Organization Performance"*** I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality document, I acknowledge and agree that:

- I will not disclose or discuss any confidential information with others, including friends or family.
- I will not in any way divulge copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
- I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
- I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
- I agree that my obligations under the agreement will continue after termination of the job that I will perform.
- I understand that violation of the agreement will have legal implications.
- I will only access or use systems or devices I am officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

  Signing the document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Date:

Appendix D: Semistructured Interview Questions

The semistructured interview questions I posed were

Question 1: What is your lived experience as a small farm farmer in making decisions in managing your small farm operations?

Question 2: When confronted with change, how do you deal with difficult decisions?

Question 3: How do you feel about the use of technology in managing your farm?