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Complexity Theory of Leadership and Management Information

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Mark Simpson

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2018

Abstract

Complexity Theory of Leadership and Management Information

by

Mark Simpson

M A., Lincoln University, Lincoln, PA

B A., Temple University, Philadelphia, PA

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Applied Management & Sciences

Walden University

December 2018

Abstract

Implementing effective leadership strategies in management of information systems

(MIS) can positively influence overall organizational performance. This study was an

exploration of the general problem of failure to lead effectively in the current knowledge-

based economy and the resulting deleterious effects on organizational performance and

threats to continuing organizational viability. The specific problem was the lack of

understanding regarding the interaction of leadership processes with MIS functions and

the impact on organizational success. Managers' and employees' lived experiences of

leadership in small- to medium-sized enterprises were explored, as well as how those

experiences influenced the organization's adaptive responses regarding technology and

performance in the knowledge-based economy. The complexity theory of leadership was

applied as the theoretical foundation for this study. A phenomenological methodology

was used. Data were collected through semi-structured interviews and analyzed through

open coding to identify emergent themes from the data. The themes were leaders

motivate employees' positive work-related behaviors, effective communication skills

ensure accessibility and efficiency ofthe organizational information system, and

leadership practices influence business productivity. This study contributes to social

change by providing insights for managers and employees regarding effective strategies

for working as teams and networks via the use of nontraditional leadership theory, which

promotes company sustainability by demonstrating the benefits of responding to the

changing economy.

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Dedication

To the ones: I had the privilege of loving and who are for-ever with me, and my loved ones who remain. We came, we saw, we built, and now we move on, higher heights and deeper depths we seek; loving you always thank you.

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Chapter 1: Introduction to the Study

Leadership and competitiveness are significant concepts in information system (IS) management in an increasingly knowledge-based business environment. Businesses in a knowledge-based economy must contend with higher levels of uncertainty, ambiguity, and interrelatedness by adapting quickly to the rapidly changing business environment (Benbya & McKelvey, 2006; Clarke, 2013; Havermans, Den Hartog, Keegan, & Uhl-Bien, 2015). Maintaining competitiveness necessitates the use of leadership processes that decentralize power and decision-making, distributing control among the individuals in the organization who are positioned to respond to changing priorities (D'Innocenzo, Mathieu, & Kukenberger, 2016; Hoch, 2013).

Responding to the shifting economy and its attendant leadership implications, researchers have proposed models of leadership that de-emphasize individual leader attributes and focus instead on leadership as a process that emerges through the interactions between multiple individuals in an organization (Curral, Marques-Quinteiro, Gomes, & Lind, 2016; Geer-Frazier, 2014). Implementing effective leadership strategies in an organization's management of information systems (MIS) may have significant positive implications on overall organizational performance.

Information systems help to coordinate and track business operations in all areas of employment and have been related to increased customer value and increased organizational financial performance (Ainin, Salleh, Bahri, & Faziharudean, 2015). There are multiple components that increase the success of information systems, including trust,

leadership processes, user expectations, attitudes towards technology, organizational role, developer relationships, expert knowledge, support from management, and organizational competence (Petter, DeLone, & McLean, 2013). It is critical for information technologies to work as systems in unison, to be aligned with organizational processes (Dwivedi et al., 2015), and to mirror the complex nature of the organization in order to effectively manage the organizational processes (Benbya & McKelvey, 2006). The remainder of this chapter includes the background of the problem, the purpose of the study, and the research questions that guided this study. Furthermore, the chapter includes a discussion of the conceptual framework, as well as information regarding the nature of the study, the assumptions, limitations and delimitations associated with this research, and a summary.

Background

MIS is becoming increasingly important and is at the center of organizational practices as a result of a significant shift in the business environment toward technology-based systems. The economy has changed from a production-based economy to a knowledge-based economy, making it critical to understand more about what leads to success in a knowledge-based economy. However, research on this area is lacking (Clarke, 2013; Havermans et al., 2015). Prior research has revealed that mere investment in MIS is not sufficient for producing gains in organizational performance (Pérez-Méndez & Machado-Cabezas, 2015). MIS use itself may not be sufficient to increase sustainable profitability, yet new management techniques (i.e., total quality management

and business process reengineering) and new MIS strategies may be important factors for promoting MIS effectiveness (Pérez-Méndez & Machado-Cabezas, 2015).

As such, it is paramount to employ effective leadership practices when managing information systems, as this affects the productivity of the entire organization. Carmeli, Gelbard, and Reiter-Palmon (2013) found that employees exhibited higher levels of creative problem-solving when their leaders were more supportive of knowledge sharing. Furthermore, innovation in organizations is positively influenced by knowledge management and organizational learning and has a positive influence on organizational performance (Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013). Shared leadership (D'Innocenzo et al., 2016), knowledge sharing efforts, participative decision-making (Nazir & Shah, 2014), and enhanced trust among team members (Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014) yields positive dividends for organizational performance.

Previous MIS research pertained mainly to its effects on organizational performance and on predictors of system use by employees. Frequent and extensive use of MIS by employees is important because it is predictive of organizational performance (Maas, Fenema, Soeters, 2014). Furthermore, employees may be more likely to use MIS when they perceive it to be empowering and not excessively controlling (Maas et al., 2014) and when they see it as being useful to them in their jobs (Wahyudi & Sung Ming, 2014). Overall use of MIS functions, use of the workforce (i.e., telecommuting), and monitoring MIS functions may positively influence employee performance and customer

value, which in turn positively affects organizational financial performance (Ainin et al., 2015). Studies also have revealed that organizational learning and knowledge sharing have implications for complexity leadership (Clarke, 2013).

In order to cultivate complexity leadership within an organization, formal leaders must have the skills necessary for developing and supporting such interactions among individuals in the organization. Traditional leadership styles may be too rigid and narrow and therefore may not align with the ever-changing organizational dynamics of today. Scholars proposed the complexity theory of leadership in recent years as a means of moving examinations of leadership into the contemporary age of the knowledge economy (Arena & Uhl-Bien, 2016). In the complexity model, leadership is a process involving multiple individuals in an organization that facilitates adaptive responses to changing business priorities and conditions (Geer-Frazier, 2014; Hazy & Uhl-Bien, 2013).

In Clarke's (2013) model of complexity leadership, organizational learning is a key dimension, with knowledge being shared by individuals and groups to enhance the evolution of practices and structures on an organizational level. This complexity leadership model also includes shared leadership as a key dimension of the process, which reflects the distributed nature of the leadership processes necessary to generate adaptive organizational responses (Clarke, 2013). The complexity theory of leadership advances a fundamentally different approach to conflict when compared with traditional leadership and management models. The complexity theory of leadership acknowledges

conflict as the source of innovation instead of attempting to reduce conflict, and innovation is perceived as the key to adaptive responses (Arena & Uhl-Bien, 2016).

The complexity theory involves reframing the organization as a complex system and recognizing that interactions between individuals in subgroups can generate novel ideas that drive innovation for the organization (Geer-Frazier, 2014). Rather than attempting to control such unpredictable interactions, complexity leadership theory proponents advocate recognition of the powerful resource such interaction represents (Geer-Frazier, 2014). In addition to the three leadership roles of complexity theory of leadership, Hazy and Uhl-Bien (2013) proposed that the complexity theory of leadership was reflected by five leadership functions that supported adaptation: generative, administrative, community-building, information gathering, and information using.

Problem Statement

The general problem to be explored was the failure to lead effectively in the current knowledge-based economy, which could have deleterious effects on organizational performance and threaten the continuing viability of organizations (D'Innocenzo et al., 2016; Hoch, 2013). Leaders need insight regarding how to monitor and manage in today's economy with the goal of helping their organizations succeed and avoid crises (Battiston et al., 2016). Specifically, leaders lack understanding about how leadership processes interact with IS functions to influence organizational success. As a result, they are poorly equipped to lead MIS functions effectively in the knowledge-based economy (Petter et al., 2013). Enacting effective leadership practices is particularly

important for small businesses, given statistics showing that about 50% of U.S. small businesses fail within the first 5 years (U.S. Small Business Association, 2016).

The MIS process is increasingly used in the current knowledge-based economy for coordinating and tracking business operations in all areas, including accounting, supply chain management, and human resources (Ainin et al., 2015). Traditional leadership models assume that the traits and behaviors of individual, formal leaders affect organizational outcomes by directly influencing the actions of employees (Arena & Uhl-Bien, 2016; Drescher et al., 2014). Although such traditional top-down leadership models were important in understanding how to motivate performance and efficiency in a production-based economy, they are less applicable in the current knowledge-based economy (Clarke, 2013; Hazy & Uhl-Bien, 2013).

The complexity theory of leadership may provide solutions for the effective management of complex information systems. A poor understanding of how the complexity theory of leadership actually unfolds in the workplace leaves managers in the knowledge economy poorly equipped to lead effectively (Clarke, 2013; Hazy & Uhl-Bien, 2013). Research is needed to explore interrelationships in the workplace that characterize the complexity theory of leadership and to identify the organizational processes in a complexity paradigm of leadership that affect an organization's adaptive problem-solving (Clarke, 2013). Bringing MIS into explorations of complexity theory of leadership served to address the two prongs of this business management problem and

integrate topics of study that are both highly relevant in today's knowledge-based economy.

Purpose of the Study

With this qualitative phenomenological study, I explored system managers' and employees' lived experiences of leadership and how those experiences influenced the organization's adaptive responses regarding technology and performance in the knowledge-based economy. Participants included five information system managers and five employees working with those managers within one small- to medium-sized enterprise (10 participants in total). Participants were recruited and interviewed until data saturation was achieved. I conducted in-depth interviews with the participants, exploring their lived experiences and perceptions regarding the leadership processes in their organization and how those perceptions generated increased understanding of how the complexity theory of leadership unfolds through information system management. Understanding how these leadership processes affect adaptive problem-solving and organizational performance may provide a deeper understanding for developing solutions that help IS managers' lead and manage more effectively.

Research Questions

The following overarching research question guided the study:

RQ1: What are managers' and employees' lived experiences about leadership that influence their organization's adaptive responses regarding technology and performance in the knowledge-based economy?

Three secondary research questions (sub-questions) guided the study as well:

SQ1: What are the employees' lived experiences that show the effect of their

managers' leadership skills in the information system departments on the

organization?

SQ2: What are the managers' lived experiences that show the effect of

personal leadership skills on their organization's information system

departments?

SQ3: What are the managers' and employees' lived experiences that show the

effect of leadership practices on their organization's adaptive responses and

organizational performance?

Conceptual Framework

I used the complexity theory of leadership as the conceptual framework in this

study. A core proposition of this theory is that leadership is a process or dynamic that

emerges through the interactions of individuals in an organization that aids the

organization in achieving adaptive outcomes (Lichtenstein et al., 2006). Adaptive

outcomes are framed as events, decisions, or strategies that reflect innovation, learning,

and/or adaptation (Lichtenstein et al., 2006). This conceptualization of leadership

emerged from application of complexity science to organizational functioning, and the

resulting representation of business organizations as complex adaptive systems (Uhl-

Bien, Marion, & McKelvey, 2007). The complex adaptive system is a network of

interdependent agents with overlapping hierarchies that work together in novel or

creative ways to solve problems and adapt to ongoing environmental changes (Uhl-Bien et al., 2007).

Given the concept of a business organization as a complex adaptive system, leadership of the organization is then cast as a process that facilitates adaptive responses by the organization (Lichtenstein et al., 2006). Formal leaders continue to have relevance within the complexity paradigm of leadership, but the function of individual leaders is to facilitate conditions in which leadership processes are likely to emerge through the interactions of all workers (Lichtenstein et al., 2006). Researchers have reported a correlation between complexity theory and servant leadership (Greenleaf, 1977), as a servant leader embodies autonomy, freedom, wholeness, and wisdom, while influencing other group members to reach their potential and become servant leaders themselves (Tanno & Banner, 2018). A servant leader who possesses the skills and traits needed for specific situations will emerge naturally, producing team cohesion because power is cocreated rather than established (Tanno & Banner, 2018).

A key proposition of complexity theory is that three leadership roles—administrative leadership, adaptive leadership, and enabling leadership—interact to yield adaptive outcomes (Lichtenstein et al., 2006). Administrative leadership consists of top-down functions by formal leaders to create structure, goals, shared vision, and rules for the organization (Uhl-Bien et al., 2007). Adaptive leadership refers to an interactive dynamic between multiple individuals in an organization, often resulting from conflict or tension and yielding adaptive responses by the organization (Uhl-Bien et al., 2007).

Finally, enabling leadership consists of actions by leaders and others in the organization to facilitate adaptive leadership, often by managing the interactions between administrative leadership to maintain order and predictability and produce emergence or innovation (Uhl-Bien et al., 2007).

Hersey and Blanchard's (1969) situational theory is related to complexity theory, but takes more of a leadership perspective. The researchers proposed that one leadership style will never be efficient in all situations, and that leaders should thus be capable of assessing a situation and responding to that situation in the most effective manner (Hersey & Blanchard, 1969). Fiedler (1964) proposed the contingency model of leadership, contending that a leader can be defined as an individual within a group who coordinates and directs tasks or who completes these functions automatically when a designated leader is not present. However, the success of a group is directly related to the leader's skills and involvement (Fiedler, 1964). Since this study focused on interrelationships within a complexity leadership paradigm relative to MIS use and organizational performance, I grounded the study in complexity leadership theory in conjunction with the principles provided by Fiedler (1964) and Hersey and Blanchard (1969).

Nature of the Study

I conducted the study using a qualitative phenomenological design. With this study, I aimed to explore the lived experiences and perceptions of employees and managers regarding leadership pertaining to information system management and the

organization's adaptive responses regarding technology and performance in the knowledge-based economy. I anticipated a high level of complexity in the exploration of leadership processes in relation to MIS, interactive processes, and organizational adaptation. Given the scant research on complexity theory of leadership with MIS, I selected a qualitative method to take advantage of that method's strengths in generating increased understanding of understudied phenomena (Ritchie & Ormston, 2013).

Complexity theory of leadership is a relatively new theory, with little research conducted regarding its expressions in the workplace (Clarke, 2013). Qualitative methods are useful for exploring a variety of participant perceptions and experiences relative to complex phenomena (Merriam & Tisdell, 2015). I determined that quantitative research was poorly suited to this inquiry because that approach is designed for examining the relationships among variables rather than exploring the perceptions of participants (Stake, 2013). For quantitative research, data is collected through surveys administered to a sample or to an entire population in order to measure the relationships between several variables, affording the researcher with the opportunity for making generalizations (Borrego, Foster, & Froyd, 2014). Given the comparative strengths of qualitative research when compared with quantitative methods, and taking the purpose of the study into consideration, I determined that a qualitative approach would satisfy the aim of the present study.

I selected a phenomenological research design because that approach allows for in-depth exploration of participants' lived experiences with regard to the phenomenon of

interest (Giorgi, 2009). Conducting in-depth interviews with managers and employees of a small- to medium-sized enterprise allowed for an exploration of their complex and varied perspectives on the current leadership and MIS in the organization and its complexity based on their own experiences (Moustakas, 1994). Phenomenology also facilitates the exploration of the meanings participants attach to their experiences (Giorgi, 2009). I explored MIS from the unique experiences of individuals who had experiences with these facets of the workplace based on the complexity leadership theory.

The participants were IS managers and the employees who work with them selected from a single small- to medium-sized enterprise. I conducted semistructured interviews with five purposively selected information system managers and 10 to 12 employees working with these managers. I also observed the interactive processes of the selected small- to medium-sized enterprise. I explored the current leadership processes present in the MIS and the impact of these processes on organizational productivity were explored through the perceptions and experiences of the participants. I expected a sample size of 15-20 participants to yield data saturation (see Mason, 2010), but I continued sampling until data saturation was achieved. I used thematic analysis to identify convergent and divergent themes in the data (Merriam & Tisdell, 2015).

Definitions

Complexity leadership: Complexity leadership refers to a recognizable pattern of relational and social organizing amongst autonomous individuals as these individuals form part of a system of action, in this case, a business organization. Complexity

leadership, therefore, refers to the significance of more comprehensive organizing effects, including individual practices as well as complex system effects (Hazy & Uhl-Bien, 2015).

Knowledge-based economy: A knowledge-based economy is an economy characterized by services and production that are based on activities that are knowledge intensive, contributing to an increased pace of scientific and technical advance and rapid obsolescence (Al-Maadeed & Weerakkody, 2016). The main element of a knowledge-based economy is an increased reliance on the intellectual capabilities of employees rather than on their physical inputs (Al-Maadeed & Weerakkody, 2016).

Leadership processes: Leadership has been defined as an event that results from the workings of interrelated agents and components (Lichtenstein et al., 2006). Leadership processes can include actions by individual leaders, by groups of individuals, or by an entire organization (Lichtenstein et al., 2006).

Management of information systems (MIS): Information systems help to coordinate and track business operations in all areas of employment (Ainin et al., 2015). MIS can be described as a focus on information, mainly involving middle managers, an integration of jobs pertaining to data processing through business functions, the organized and structured flow of information, and an inquiry and report facility (Galliers & Leidner, 2014).

Small- to medium-sized enterprise (SME): While countries often vary in their definitions of small- to medium-sized enterprise, the most common concept would

specify fewer than 250 employees. An SME is also a formal organization and thus different from informal businesses (Ayyagari, Beck, & Demirguc-Kunt, 2007).

Assumptions

I assumed that participants would be truthful in their interviews and also assumed that their own perspectives and biases could influence their memories and their reports of occurrences. I provided participants with a confidentiality agreement before data collection began, thereby furnishing them with circumstances that encouraged truthfulness. Participants were reassured that identifying information, names, company names and company locations, for example, would be known only to the researcher, therefore creating a more relaxed environment that facilitated honest responses from the participants. The second assumption was that the interaction within the organization would yield an accurate reflection of the daily operations, although awareness of the researcher may have caused managers and employees to adjust their actions.

Scope and Delimitations

Delimitations are the methodological aspects of a study that a researcher can control (Grant & Tomal, 2013). The first delimitation was the purposeful sampling of employees and managers from one small- to medium-sized enterprise. The sample was delimited to one organization in one industry dealing with MIS. The study was further delimited to the complexity theory of leadership and explored only the leadership processes pertaining to this theory. Other leadership theories were not explored.

Limitations

Limitations are the methodological aspects of a study that a researcher cannot control (Grant &Tomal, 2013). The first limitation of this study related to the generalizability of the study findings. As this study was conducted with participants from only a single small- to medium-sized enterprise, the findings may not be generalizable to larger organizations or to other industries different from the organization used for the study. Another limitation was the existence of potential bias on the part the researcher while collecting data and communicating with participants. Another limitation was potentially existing bias between the employees and the managers participating in this study given that they all knew each other and worked together. With these issues in mind, I actively focused on the data being collected, making sure to stay true to the essence thereof and to avoid influence from the perspectives of the employees or managers.

Significance

The findings of this study could provide a deeper understanding of the leadership processes used by IS managers, of their strengths and weaknesses, and of how leadership processes affect organizational productivity. The findings of this study contribute to the body of literature regarding the complexity theory of leadership, providing further application of this theory in doctoral research. With the shift from a production-based to a knowledge-based economy, both MIS use and leadership practices from a complexity paradigm are becoming increasingly relevant (Geer-Frazier, 2014; Maas et al., 2014). The exploration of how these workplace factors are combined provides increased

understanding of how leaders perceive complexity through their MIS practices, which might be helpful to leaders in developing MIS practices that are effective in achieving their leadership aim.

Complexity theory of leadership is a new theory, and findings from this phenomenological study may yield new insights regarding how the theory unfolds on a day-to-day basis. Such insights could prove helpful for developing the complexity theory of leadership construct, which could contribute to future research endeavors (i.e., scale development), and also could provide useful practical guidance for leaders wishing to implement a complexity theory of leadership dynamic. Understanding the leadership processes of IS will add to the literature and could provide solutions for leading in MIS. The implementation of more effective leadership practices in a complexity paradigm, in combination with effective leadership as expressed through MIS, might lead to positive social change by facilitating organizational conditions that are supportive of adaptive problem-solving and team performance. Improving adaptive responses and organizational performance may increase organizations' competitiveness in the current knowledge-based economy (Clarke, 2013; Geer-Frazier, 2014).

Summary

Implementing effective leadership strategies in MIS may have significant positive implications on overall organizational performance. Information technologies should work as systems, should be aligned with organizational processes (Dwivedi et al., 2015), and should mirror the complex nature of the organization in order to effectively manage

the organizational processes (Benbya & McKelvey, 2006). The general problem to be explored was the failure to lead effectively in the current knowledge-based economy, resulting in decreased organizational performance and threatening the continuing viability of organizations (D'Innocenzo et al., 2016; Hoch, 2013). As such, the purpose of this qualitative phenomenological study was to explore system managers' and employees' lived experiences regarding leadership and how those experiences influence the organization's adaptive responses regarding technology and performance in the knowledge-based economy. I used an overarching research question and three subquestions to guide the study.

I explored how IS managers' lead their teams and their departments in order to achieve optimal productivity in the knowledge-based economy. The participants were IS managers and the employees working with them within one small- to medium-sized enterprise. I conducted semi-structured interviews with five purposively selected information system managers and five employees working with these managers. I used thematic analysis to identify convergent and divergent themes in the data (Merriam & Tisdell, 2015).

Chapter 2 includes a discussion on the available literature regarding MIS and leadership, as well as further discussion of the conceptual framework. Chapter 3 includes a discussion of the research methodology, research design, data collection and analysis procedures, the population sample, and recruitment procedures. Chapter 4 includes a detailed review of the findings. Chapter 5 includes a discussion of the findings related to

the literature, implications, and recommendations for future research and ends with an

overall conclusion of the study.

Chapter 2: Literature Review

Prior research has demonstrated the importance of top-down, traditional leadership styles for organizations to succeed in production-based economies (Arena & Uhl-Bien, 2016; Clarke, 2013). However, the economy has changed, and so have the components necessary for organizational success (Clarke, 2013; Havermans et al., 2015). Our economy has shifted from a production basis to a knowledge basis, leaving a gap in understanding about the factors and strategies that lead to success in a knowledge-based economy (Clarke, 2013; Havermans et al., 2015). Although much research has been conducted on the complexity theory of leadership, little insight has been produced regarding the impact of the complexity theory of leadership on today's knowledge-based economy.

Organizations and their leaders must adapt to the changing nature of the economy. Critical components of today's organizations include knowledge sharing, interrelationships among people and processes, adaptive problem solving, and MIS. MIS have become increasingly widespread and are beneficial for organizational management and success. Additionally, organizations benefit most from MIS that align with organizational leadership processes.

Due to the shift from a production-based to a knowledge-based economy, research is needed to identify the factors that promote success in a knowledge-based economy. MIS refers to organizational systems that are growing in use and popularity and may help promote successful organizations. Therefore, this study examined MIS more closely

within the organizational setting of the changing economy. I examined the complexity

theory of leadership along with the organizational processes known as MIS to determine

what role, if any, these components have in leadership success, including organizational

problem solving, adaptation, and performance.

-to identify the factors that contribute to leadership success in the workplace.

Specifically, this qualitative phenomenological study focused on the workplace

characteristics and organizational processes involved in the complexity theory of

leadership. MIS denotes an organizational technological process that is growing in use

and may facilitate successful business operations in today's economy (Ainin et al., 2015).

In this study, I explored this specific type of organizational process and the leadership of

this function in an organization.

Because ineffective leadership can lead to organizational failure (D'Innocenzo et

al., 2016), finding alternatives to traditional leadership in today's economy has become

urgent. Findings from this study may help to show how complexity leadership unfolds in

the workplace from the perspectives of both managers and their employees. I focused on

a small firm due to the high rate of failure for small businesses, in order to provide

practical guidance to leaders seeking to increase understanding of the importance of

incorporating information management systems into their leadership processes.

Literature Search Strategy

I used two search engines, ERIC and Google Scholar, to gather existing literature

for review. Search terms included *leadership, complexity theory of leadership,*

knowledge-based economy, organizational success, and *management information*

systems. Terms were first searched together in order to locate the most relevant studies,

and were then searched individually. I continued each search until I had located three

irrelevant articles in a row, conducting the process on both search engines. Lastly, if areas

of importance for the current literature review were lacking adequate support from

previous literature, these topics were searched individually to assist with adding detail for

an all-inclusive review.

When possible, relevant, peer-reviewed articles dated from 2014 to the present

were included in the literature review. Notable and relevant articles from prior to 2014

were included if they helped form a comprehensive perspective of the previous literature.

A total of 99 articles were used to support the current study, with 86 of them (87%)

published between 2014 and the present and 13 of them (13%) published prior to 2014.

Conceptual Foundation

I used the complexity theory of leadership as the theoretical framework for the

study. The complexity theory is crucial to the dynamic organizational and economic

systems of today (Baltaci & Balci, 2017), given its focus on relationships and

connections in a comprehensive model (Shulman & Sullivan, 2015; Shoup, 2016). Shoup

(2016) highlighted the fact that many leadership models are examined in isolation and

that the complexity theory of leadership presents a holistic explanation for leadership and

organizational success in the modern economy. For instance, many organizational studies

focus on the bureaucratic, power-related leadership in organizations, but this is not

realistic given the complex nature of organizations today, thus the need to examine all parts of organizational leadership in a collective manner. In reality, organizations are nonlinear and dynamic, meaning they are multifaceted, always changing, and not always controllable or predictable (Shoup, 2026).

The complexity theory of leadership posits that leadership is a process or dynamic that emerges through the interactions of individuals within an organization and that supports the organization to achieve adaptive outcomes (Lichtenstein et al., 2006). Adaptive outcomes are framed as events, decisions, or strategies that reflect innovation, learning, and/or adaptation (Lichtenstein et al., 2006). Leadership styles need to match the changing nature of organizations. The complexity theory hinges on the notion of complex adaptive strategies that help an organization adjust to tensions and maintain organizational homeostasis. Earlier models of leadership have not taken into account the micro- and macrolevel forces that influence the whole organizational system. Complexity theory, however, offers a collective approach for adapting to dynamic environments and allows leaders who follow this model to better prepare for challenges and to perform better (Shoup, 2016). Additionally, interorganizational complexity has been shown to be related to negative outcomes such as organizational safety, and therefore a theory of leadership that considers all of the complex interrelations in an organization is necessary (Milch & Laumann, 2016).

The complexity theory of leadership is a newer model of leadership that is being increasingly incorporated into the contemporary age of the knowledge-based economy

(Arena & Uhl-Bien, 2016). According to the complexity model, leadership is a process involving multiple individuals within an organization that facilitates adaptive responses to changing business priorities and conditions (Geer-Frazier, 2014; Hazy & Uhl-Bien, 2013). Leadership processes are likely to emerge through the interactions of all workers (Lichtenstein et al., 2006).

A key proposition of the theory is that three leadership roles, administrative leadership, adaptive leadership, and enabling leadership, interact to yield adaptive outcomes (Lichtenstein et al., 2006). Administrative leadership consists of top-down functions by formal leaders to create structure, goals, shared vision, and rules for the organization (Uhl-Bien et al., 2007). Adaptive leadership refers to an interactive dynamic between multiple individuals within the organization that often results from conflict or tension and that leads to adaptive responses by the organization (Uhl-Bien et al., 2007). Finally, enabling leadership consists of actions by leaders and others in the organization that facilitate adaptive leadership, often by managing the interactions between administrative leaders in order to maintain order and predictability and emergence or innovation (Uhl-Bien et al., 2007). Further research is needed to explore interrelationships within organizations and how organizational processes in a complexity model of leadership affect an organization's adaptive problem-solving (Clarke, 2013).

The complexity theory of leadership includes four notable dimensions: network conditions, shared leadership, organizational learning, and leader skills and knowledge. These four dimensions, when examined as a comprehensive process, can help

organizations be successful (Clarke, 2013). Scholars suggest that the complexity theory of leadership is reflected in five leadership functions that support adaptive responses: generative designs, administrative leadership, community building, information gathering, and information use (Hazy & Uhl-Bien, 2013).

The complexity theory of leadership proposes a much different approach to conflict compared with traditional leadership and management models. Rather than attempting to reduce conflict, complexity theory of leadership acknowledges conflict as a source of innovation, which in turn is the driver of adapting to complex changes (Arena & Uhl-Bien, 2016). Complexity theory proponents describe conflict as adaptive space that bridges the two organizational systems, recommending that leaders embrace rather than manage conflict because it drives change and increases organizational success (Arena & Uhl-Bien, 2016).

Additionally, complexity theory depicts organizations as complex systems, recognizing that interrelationships among individuals can generate novel ideas that perpetuate organizational innovation and success (Geer-Frazier, 2014). Instead of attempting to control problems and unpredictable situations, complexity leadership theory takes a different stance of embracing problems and complex situations in order to achieve organizational advancement (Geer-Frazier, 2014).

The Importance of Shared Leadership in the Complexity Theory

The complexity theory stresses the importance of embracing problems and adapting to them. Complexity theory of leadership also emphasizes the interactions

among people and processes as well as knowledge sharing (e.g., Clarke, 2013). Clarke

(2013) proposed a model of complexity leadership in which organizational learning

played a crucial role because knowledge is shared by individuals and groups. Complexity

leadership emphasizes the systemic nature of organizations and the existence of many

interrelations that make up an organization (Clarke, 2013). To support complexity

leadership in an organization, leaders must embrace interactions and interrelationships

among all individuals in the organization. Clarke's model of complexity leadership

included shared leadership as a crucial component of the complexity leadership process

necessary for generating adaptive organizational responses. Without shared leadership,

adapting to complex situations becomes difficult.

Shared leadership has been shown to increase the sense of trust among individuals

within an organization (Drescher et al., 2014). For instance, Drescher et al. (2014)

examined whether shared leadership within groups promotes a greater sense of trust,

subsequently increasing group performance. Drescher et al. (2014) conducted the study in

two cycles, with 3,289 individuals divided into 142 groups participating in the first cycle

and 849 individuals divided into 86 groups participating in the second cycle. Participants

completed a group simulation game, rating their levels of group trust. Results showed

that shared leadership did promote more trust among group members. Additionally,

shared leadership was positively correlated with group performance through the increased

sense of trust. In other words, trust mediated the relationship between knowledge sharing

and performance (Drescher et al., 2014). Importantly, the positive outcomes of shared

leadership and group trust were not only apparent after the initial task, they were also apparent over time. This study highlighted the dynamic process of group success in the absence of a single leader, supporting the proposition of the complexity theory of leadership that leadership is present at all levels of an organization or team (Drescher et al., 2014).

Knowledge sharing also promotes better decision-making (Nazir & Shah, 2014). For instance, Nazir and Shah (2014) examined knowledge sharing, leadership styles, and participative decision-making, as well as the impacts of those factors on organizational performance. The shift to a knowledge-based economy has been accompanied by a shift in focus from sharing knowledge to retaining knowledge, despite the fact that knowledge sharing is critical for organizational and individual performance. Nazir and Shah provided 300 individuals with questionnaires measuring the variables of focus, with 245 individuals completing and returning the questionnaires. Results showed that knowledge sharing was strongly positively correlated with organizational performance, as were participative decision-making and transformational leadership.

Additionally, Nazir and Shah (2014) found that, when examined in unison, the model containing knowledge sharing, participative decision-making, and transformational leadership accounted for a significant amount of variance (48.9%) in the outcome of organizational performance. Importantly, results showed that collinearity was not an issue, suggesting that these predictor variables were not highly correlated with one another (Nazir & Shah, 2014). In summary, shared leadership, an important component

of complexity leadership was shown to positively impact organizational performance. (D'Innocenzo et al., 2016; Nazir & Shah, 2014).

A key component of the complexity theory of leadership is the concept of leadership as a comprehensive process that emerges through the interactions and interrelationships of individuals within an organization and that supports the organization in achieving adaptive outcomes (i.e., events, decisions, or strategies that reflect innovation, learning, and/or adaptation). The process ultimately enables a complex organization to effectively manage and respond to complex situations (Lichtenstein et al., 2006).

Complexity leadership is a strong alternative to traditional leadership. Traditional leadership, typical of the production-based economy, involves: an individual leader's vision; a leader who has followers who play passive roles; a leader who makes unilateral decisions, a leader who is at the top of the hierarchy; and a leader who is the one and only director of organizational actions (Imperial et al., 2016). Today's organizations do not fit within the narrow boundaries of traditional leadership; instead, challenges suddenly occur, quick adaption is often needed, roles within an organization are always shifting, and collaborative mindsets are needed. Imperial et al. (2016) noted that because today's organizations are full of shared problems, goals and solutions, traditional leadership is no longer the most effective leadership style.

Although complexity theory may be most beneficial for today's changing economy and dynamic workforce and organizations (Tal & Gordon, 2016), the research

on complexity theory is still in its early stages. More research is needed regarding the ways that complexity theory unfolds in the workplace in the newly evolved knowledge-based economy and alongside other beneficial components of the workplace, including management information systems. Management information systems have been linked to organizational success, and are becoming increasingly popular and necessary in organizations today (Al Shobaki & Naser, 2016; Naser & Al Shobaki, 2016; Shao, Feng & Hu, 2016). Complexity theory may be a crucial component of organizational success in today's economy, and may be more easily integrated into organizations by being incorporated into management information systems.

Review of the Literature

In the following section, I will discuss the results of the literature search starting with characteristics of leadership success and followed by research on the complexity theory of leadership as it relates to leadership and organizational success and to the literature regarding MIS and complexity theory. Finally, the literature review concludes with a discussion of the gaps in the literature, the conflicting results found in previous studies, and the critical impact that the current study had on this field of leadership success research.

Organizations in a Shifting Economy

The economy has shifted from a production-based system to a knowledge-based system, a shift that organizations and leaders must respond to effectively (Al-Maadeed & Weerakkody, 2016; Clarke, 2013; Hazy & Uhl-Bien, 2013; Sørensen, Bloch & Young,

2016). This new focus on knowledge sharing has different impacts on leadership styles and on the factors necessary for the success of organizations, their leaders and their workers (Nazir & Shah, 2014). Success depends on the ability to adapt in complex situations (Havermans et al., 2015).

Havermans et al. (2015) examined ambidexterity (being able to exploit current strengths and explore new possibilities) and complexity theory in the leadership process. Through a qualitative study, the authors analyzed data from 42 interviews regarding leadership styles and ambidexterity. In the second part of the study, the authors gathered data from 11 semi-structured interviews regarding problems and how these problems were handled. Havermans et al. (2015) found that leaders exhibited high levels of both exploitation and exploration and that the levels increased as the pressures increased. These findings supported complexity theory's emphasis on the complexities of organizations and the need to use pressures to generate change and adaptation. Additionally, ambidexterity was shown to result from interactions among leaders and team members, which also aligns complexity theory's emphasis on interconnectedness and relationships within organizations (Havermans et al., 2015). In summary, results showed that responding quickly to challenges and adapting to tensions and pressure are an important aspect of leadership and that all of these components occurred in combination (Havermans et al., 2015).

Along with the change from a production-based to a knowledge-based economy came a shift in emphasis from human capital to social capital, particularly in terms of

organizational success (Arena & Uhl-Bien, 2016; Popescu, Comănescu & Sabie, 2016; Van De Valk & Constas, 2011; Zhang & Cheng, 2015). In the context of this study, capital refers to a resource that will aid in improvement. Social capital, therefore, is a social resource that aids in improvement, including but not limited to bonds with or networks of people (Johnson, 2016). Literature has shown that trust, reciprocal relationships, collective action, and networking go hand-in-hand with social capital (Johnson, 2016). Ultimately, social capital can positively impact individuals, as well as the organizations they represent (Johnson, 2016). Joo, Lim, and Kim (2016) found that by focusing on capital in the workplace and fostering supportive relationships among leaders and employees, leaders can improve employee's attitudes towards the workplace.

It is important for leaders and organizations to recognize social capital's role in the workplaces of today. Zhang and Cheng (2015) showed that social capital mediated the relation between knowledge sharing and knowledge leadership. This suggests that the importance of trust, shared visions and collaborative environments is critical for organizational efficiency. This also supports other research demonstrating the important role that environment plays in performance (Zohar & Polachek, 2014). Researchers not the importance of fostering an organizational environment that promotes social capital (Ruseva, Farmer & Chancellor, 2016). Ruseva et al. (2016) determined that organizational networks and partnerships, along with mutually agreed upon values and cooperation, are correlated to perceived success, which can be beneficial for the organization as a whole (Ruseva et al., 2016).

Additionally, attaining a mutual investment predicts employee innovation – an important factor for the dynamic organizations of today – due to the existence of social and human capital. In other words, social and human capitals were mediating factors (Bornay-Barrachina, Lopez-Cabrales & Valle-Cabrera, 2017). In the organizations of today, emphasizing individual leader attributes is critical for success, a reality that aligns with the complexity theory of leadership and its focus on interrelatedness and systemicity of organizational leadership (Clarke, 2013; Cullen-Lester & Yammarino, 2016; Friedrich, Griffith & Mumford, 2016; Hazy & Uhl-Bien, 2015; Kunze, De Jong, & Bruch, 2016; Lester, Palanski, Hammond & Clapp-Smith, 2017; Schaubroeck et al., 2016). Additionally, shared leadership has been shown to create positive changes in performance, including a sense of trust, improved group dynamics, and improved performance over time (Drescher et al., 2014).

In another study of 184 employees and their leaders from two different companies, Hoch (2013) concluded that shared leadership was positively correlated to innovative behavior and empowering leadership styles. Team composition was positively correlated with shared leadership (Hoch, 2013). Social capital may be of particular importance for organizations' complex projects (Moore, Payne, Autry & Griffis, 2016). For instance, research has shown that project complexity is inversely related to project performance, but that this relationship depends on the level of social capital (Moore et al., 2016).

Previous literature offers support for the use of shared leadership, which is especially important in today's organizations where there is an increased use of team work arrangements (Hoch, 2013; Hoch & Delebohn, 2013; Hoch & Kozlowski, 2014). Hoch and Kozlowski (2014) examined multiple components of leadership, including structural support, reward management, supervisory mentoring, leader member exchange, specific leadership styles, and shared team leadership, concluding that leadership is a complex process. Study results showed that shared team leadership was positively correlated with team performance in a sample of 101 virtual teams made up of 565 individual participants. The degree of team virtuality was measured by geographic spread, electronic communication, and cultural differences. Researchers determined that structural support was also positively correlated with performance and that structural supports were shown to be more strongly related to team performance compared to hierarchical leadership styles when the level of team virtuality was higher (Hoch and Kozlowski, 2014). However, the relationship between shared team leadership and team performance was present regardless of level of virtuality, highlighting the importance of the use of shared team leadership and aligning well with the complexity theory of leadership and its emphasis on knowledge sharing (Hoch & Kozlowski, 2014).

Group knowledge sharing has been shown to increase levels of creativity and performance (Dong, Bartol, Zhang, & Li, 2017). For instance, Dong et al. (2017) explored the interrelationships among managers, team members, employees and analyzed their creativity, knowledge sharing and skill development. Dong et al. (2017) compared

the use of team-focused leadership to the use of individually focused leadership. A total of 171 individuals from eight different companies were divided into 43 organizational teams for purposes of study participation. Individual skill development and individual creativity were measured by self-reporting questionnaires and team knowledge sharing and team creativity were measured by supervisors' ratings of the teams. Results showed that individually focused leadership impacted creativity through individual skill development, but that team-focused leadership impacted team creativity through team knowledge sharing (Dong et al., 2017).

The study conducted by Dong and colleagues (2017) highlighted different components of leadership styles that help performance and improve organizational success. Additionally, this study showed the need for a connection between individuals, teams, and leaders and demonstrated that a collective focus helps to generate creative ideas. Supporting individual skill development can also benefit the teams, as can knowledge sharing among team members (Dong et al., 2017). Further research is needed to test this implication (Dong et al., 2017).

Organizations Today: Many Working Parts

Organizational success requires a focus on interactions between individuals, environment and relationships, the changing environment and social capital (Champoux, 2016; Clarke, O'Connor & Leavy, 2016; Eisenberger, Malone & Presson, 2016; Girma, 2016; Greer-Frazier, 2014; Jaiswal & Dhar, 2015; Jing & Avery, 2016; Weer & Greenhaus, 2017; Stinglhamber, Caesens, Clark & Eisenberger, 2016; Turner & Baker,

2017; Zhong, Wayne & Liden, 2016). Systems thinking are important (Haines, 2016) because leadership is a dynamic process (e.g., Gordon, Rees, Ker & Cleland, 2016). Failing to act as a unit can lead an organization down the path to failure (Dillon, Rogers, Oberhettinger & Tinsley, 2016; Garicano & Rayo, 2016).

Carmeli et al. (2013) examined the various factors related to enhanced organizational performance, a concept that aligns with complexity theory's emphasis on leadership as a complex process of many working parts. The first cycle of the study involved recruiting 350 employees of various organizations, 274 of whom completed the required measures. Researchers measured creative problem solving capacity, knowledge sharing, and leader behavior. A total of 130 employees participated in the second portion of the study, which measured creative performance, creative problem solving, and leader behavior. Results showed that leaders who encouraged and cultivated an environment of knowledge sharing impacted employee perceptions of knowledge sharing and increased knowledge sharing behaviors. These improvements led to a greater capacity for generating creative problem-solving ideas. In summary, researchers found that both internal and external factors related to performance and creativity in the workplace, results that align with the complexity theory concept of the importance of the interaction of organizational components for organizational success and employee success (Carmeli et al., 2013).

Clarke (2013) suggested that behaviors of individuals interact with broader organizational processes to produce positive leadership. Additionally, Lichtenstein et al.

(2006) described leadership as a dynamic, complex, adaptive process that results from interactions among people, ideas and everything in between, including tension, exchange rules, and perceptions. Dong, Liao, Chuang, Zhou, and Campbell (2015) examined the interconnectedness among customers, employees and the overall company, emphasizing the importance of viewing organizational processes as a single, collective, dynamic process. A total of 380 employees in 118 companies and 3,550 of the company's customers participated in the study (Dong et al., 2015). Customers completed self-reported customer satisfaction measures and the employees rated their creativity, their supervisors' empowering leadership, their employee promotion focus, and how they perceived customers' empowering behaviors (for example, helping employees to see value in their work). Results showed that employee creativity was positively correlated to customer empowering behaviors, which, in turn, was related to customer satisfaction and ultimately to organizational success. Additionally, supervisory empowering leadership strengthened the impact of customer empowering behaviors on employee creativity through employee promotion focus. Notably, this study highlighted the connections among many pieces of an organization and showed that empowering behaviors from different sources combine to foster employee creativity (Clarke, 2013).

Previous research has revealed interrelationships among leaders and employees (Reb, Narayan & Chaturvedi, 2014), along with interrelations among the leadership process, organizational learning, knowledge management, and organizational performance. Performance increased as a result of this complex relationship, not from the

influence of a single factor alone (Noruzy et al., 2013). Schermuly and Meyer (2015) examined the leadership-member exchange, a critical component of knowledge sharing and the complexity theory and benefits to employees. Specifically, researchers examined whether the leadership-member exchange impacted employee's psychological empowerment, emotional exhaustion, and depression; these variables were chosen because of their important impacts on employee performance (and ultimately organizational performance). A total of 750 employees were recruited for the study, but a total of 318 respondents completed the study measures (Schermuly & Meyer, 2015)

Results from the study by Schermuly and Meyer (2015) showed that the leadership-member exchange was positively correlated with empowerment, and empowerment was negatively correlated with emotional exhaustion, suggesting that the leadership-member exchange helps to indirectly decrease exhaustion and depression; this in turn helps performance, at both the individual and organizational level. Furthermore, this study is important because it sheds light on how the leadership-member exchange, which has been shown to be beneficial for organizational performance, also positively impacts the psychological well-being of individual employees (Schermuly & Meyer, 2015).

In Schermuly and Meyer's (2015) second study, 541 participants completed the first round of measures and 144 completed the second round of measures. Additional results showed that the leadership-member exchange was related to feelings of depression through the variable of psychological empowerment (meaning empowerment was a

mediating variable). This study highlighted the importance of examining internal, psychological factors as well as external (leadership styles) in combination.

Wang, Fang, Qureshi, and Janssen (2015) also demonstrated the strength of the leader-membership exchange theory where exhibiting the leader-membership exchange related positively to innovative behavior. These researchers examined the outcome of employee innovation and whether it was impacted by other factors in the organizational system, including social networks and the leader-member exchange. A total of 135 employees from a single organization participated in the study, with supervisors assessing employee innovative behavior. Leader-membership exchange also was assessed, as were out-group weak ties and within-group strong ties as they related to employees ties to the organization. For the purpose of this study, weak or strong ties were generated based on the amount of interaction that occurred among the individuals at the firm (Wang et al., 2015).

Results from the study by Wang et al. (2015) showed that the number of weak ties was positively correlated with innovative behavior only due to the presence of the leadership-member exchange, with the leadership-member exchange being a mediating factor. The number of within-group ties moderated the correlation between the leadership-member exchange and innovative behavior, where the relation was only significant with a low number of strong ties. Lastly, the out-group weak ties were related to innovative behaviors through the leadership-member exchange, but this was conditional upon the within-group strong ties. In other words, the relationship only

existed when strong ties were minimal. In summary, this study helped to shed light on the complexities of organizational success – namely innovative behaviors – aligning with the complexity theory that organizational success is made up of many working parts (Wang et al., 2015).

Almatrooshi, Singh, and Farouk (2016) also demonstrated the interconnectedness between managers and employees. These researchers demonstrated that cognitive, emotional and social components of leaders have an impact on employee performance as well as overall organizational performance. The dynamics of the typical organization are changing today too, which needs to be incorporated into the leadership process. The workplace now has a large variety of age groups represented and here is a need for leaders to take this into consideration and adapt to this change in order to be successful (Hammond, Lester, Clapp-Smith, & Palanski, 2017). This change in employee characteristics is one of the many reasons why leadership styles that actively and collaboratively adapt to changes are more efficient for today's economy and organizations (Hammond et al., 2017).

In conclusion, the changing economy and new focus on social capital in today's organizations calls for new leadership styles in order for organizations to be successful. Today's organizations call for a non-traditional style of leadership that seems to best align with current organizational needs and values. There is a new emphasis on leadership as a dynamic, multi-level process that is never static. Furthermore, changes and problems will continue to arise, requiring organizations to rapidly adapt. Adaptive

problem solving is a critical component of the leadership process as is knowledge sharing. Today's organizations must stress the importance of the interactions among leaders, employers, and organizational climates. Leadership is not apparent at a single level, but transcends levels. Leadership roles are ever-changing. This study examined complexity leadership theory to determine how it unfolds in today's workplace and whether it better aligns with the demands of organizations today than traditional leadership theories.

Problems with Traditional Leadership

Research has shown that the type of traditional leadership styles that were typical of a production-based economy involved leaders who owned the vision of their companies, had followers who played passive roles, made unilateral decisions, were at the top of the hierarchy, and served as the sole directors of organizational actions (Imperial et al., 2016). Today's organizations, however, do not fit within the narrow boundaries of traditional leadership. Challenges arise suddenly, requiring quick adaptation, and roles shift constantly, requiring collaborative mindsets. Imperial et al. (2016) posited that the workplace today is full of shared problems, goals and solutions, making traditional leadership a less effective leadership style.

Additionally, many factors influence employees, contradicting the traditional leadership notion that leaders directly influence the actions of their employees (Arena & Uhl-Bien, 2016). Today, good leaders lead collaboratively and facilitate rather than control their employees. Good leaders enable others to lead as well, instead of serving as

the sole decision maker (Imperial et al., 2016). Today, organizations require a network of leadership strategies rather than single leaders (Imperial et al., 2016).

Components of Complexity Leadership

Responding to the shifting economy and its attendant leadership implications, researchers have proposed models of leadership that de-emphasize individual leadership attributes and focus instead on leadership as a process that emerges through the interactions among multiple individuals in an organization (Curral et al., 2016; Geer-Frazier, 2014). Traditional leadership styles are too rigid and narrow, failing to align with the ever-changing organizational dynamics of today. The complexity theory is crucial to the dynamic organizational and economic systems of today (Baltaci & Balci, 2017) because of its focus on relationships and connections in a comprehensive and dynamic model (Lord & Dinh, 2014; Shulman & Sullivan, 2015; Shoup, 2016; Turner & Baker, 2017). Baltaci and Balci (2017) described the complexity theory of leadership as depicting a dynamic, collaborative, process that increases knowledge sharing, learning, creativity, and ultimately organizational success. This theory emerged from the complex, technological evolution of organizational systems, responding to the shift from the industrial age to the information age. This theory addresses the abilities of organizations to adapt as a result of experiencing pressures and problems.

Hazy and Uhl-Bien (2013) suggested that the complexity theory of leadership incorporated five leadership functions that supported adaptation: generative xxxxx, administrative xxxxx, community-building, information gathering, and information

using. Complexity theory of leadership advances a fundamentally different approach to conflict than traditional leadership and management models. Rather than seeking to reduce conflict, complexity theory of leadership acknowledges conflict as the source of innovation, which is key to the development of adaptive responses (Arena & Uhl-Bien, 2016). Complexity theory involves reframing the organization as a complex system, and recognizing that interactions between individuals in subgroups can generate novel ideas that drive innovation for the organization; rather than attempting to control such unpredictable interactions, complexity leadership theory proponents advocate recognition of the powerful resource such interaction represents (Geer-Frazier, 2014).

Additionally, Baltaci and Balci (2017) discussed how leadership under the complexity theory results from three key components: control, creative problem solving and decision-making. Administrative leadership involves control and an organizational hierarchy, while xxxxxx leadership involves innovation, problem-solving and learning. Action-centered leadership involves dynamic decision-making in response to pressures and problems. For the changing nature of organizations today and because of the unpredictable nature of organizational processes, complexity theory supports organizational success by emphasizing the need for appreciating chaos and uncertainties and for learning from them and adapting to them. The complexity model of leadership differs from traditional and bureaucratic leadership models in that leadership is seen as interactive and dynamic and based on adapting to pressures (Baltaci & Balci, 2017). Additionally, inter-organizational complexity has been shown to be related to negative

outcomes such as organizational safety, and therefore a theory of leadership that considers all of the complex interrelations in an organization is necessary (Milch & Laumann, 2016).

Clarke (2013) discussed the complexity theory of leadership, namely the emphasis on leadership as a system and the human capital components of leadership development, instead of focusing on individual leadership factors. Clarke (2013) explained that through building social capital, an organization gains the ability to work as a collective unit. Notably, individual factors interact with organizational factors to create a complex system and produce leadership at many levels. Clarke (2013) noted four main components of complexity leadership development: (a) the network conditions that build the ability to adapt and respond to complexity; (b) shared leadership, or the interaction among many components of the organizations and the interdependence between agents in the organization; (c) the organization learning that results from adapting to problems and tensions – an important social process that involves working together to make sense of information and acting accordingly and (d) the skills and knowledge of the leader, whether he or she leading informally or formally (Clarke, 2013).

Benefits of Complexity Theory of Leadership

The complexity theory stresses the importance of organizational processes as a whole, the use of adaptive problem solving, and organization (Anderson & Meyer, 2016; Cicmil, Cooke-Davies, Crawford & Richardson, 2017; Lowell, 2016; Schneider, Wickert & Marti, 2017; Thompson, Fazio, Kustra, Patrick & Stanley, 2016; Tsoukas, 2017).

Thompson et al. (2016) examined the complexity theory in the context of health services, an area that had been given little scholarly attention in complexity theory literature. Results from Thompson et al.'s (2016) literature review yielded 44 relevant studies, of which 27 were qualitative, 14 were quantitative, and three were mixed methods. Findings revealed that relationships, self-organization, and diversity were the most common components of the complexity theory of leadership used in health settings. The Thompson et al. (2016) study demonstrated the interactions of various relationships and communications and how those interactions positively impact change, results that aligned with previous research on the benefits of complexity theory (Thompson et al., 2016).

Research has revealed the need for adaptive mechanisms based on changing conditions (Baltaci & Balci, 2017), which can be accomplished by adhering to the principles of the complexity theory of leadership. Additionally, when organizations apply complex adaptive systems, they are able to more effectively solve problems (Greer-Frazier, 2014). Greer-Frazier (2014) examined the use of complexity leadership to adapt to complex situations and generate effective solutions. The researcher emphasized the dynamic and interconnected components of the organization, including its organizational structure, its environment, and the performances of both individuals and the company as a whole (Greer-Frazier, 2014).

Organizations of today must be dynamic in order to adapt to complex demands (e.g., Clarke, 2013). The complexity theory strays away from the need to control members of the organization, instead suggesting that uncertainties are welcome triggers

for organizational change and adaptation without which organizations of today would not be truly successful. Part of the complex organizational system also includes individuals, groups, and social networks, as well as the interrelationships those groups. The relationships produce their own tensions, which are necessary ingredients for organizational decision making, growth, and improved performance.

Adaptive problem solving and adaptive performance are crucial for organizational success (Jundt, Shoss, & Huang, 2014) and are critical components of complexity theory. It has been suggested that adaptive performance involves many interconnected components, all of which align with complexity leadership. Adaptive performance is made up of individual differences, training and learning strategies, job, task and contextual factors, cognitive and behavioral strategies, and motivation and self-regulation. Individual differences can involve cognitive abilities, conscientiousness, emotional stability, and goal orientation. Training and learning techniques can involve error management, adaptive guidance, and exploratory learning. Job, task and contextual factors involves support from leaders. Cognitive and behavioral strategies include declarative knowledge, knowledge structure coherence and adaptive experience. Lastly, motivation and self-regulation involves self-efficacy and metacognition. Like leadership, problem solving, learning and success are dynamic processes (Jundt et al., 2014).

In contrast to traditional leadership styles, complexity theory moves away from the top-down approach of leadership, acknowledging that situations are not always stable and predictable (Bryson, Sancino, Benington, & Sørensen, 2017; Bums, 2016; Ochara,

2017). Leadership is exhibited at all levels of an organization, not just among managers (Bandow & Self, 2016). Leadership is a collective process, and when applied to group settings, the groups were able to be more efficient over time in decision-making tasks compared to groups where complexity theory was not applied (Curral et al., 2016; Ng, 2015). For instance, Curral et al. (2016) examined whether the complexity model helped improve efficiency in-group decision-making tasks. A total of 200 graduate students attending a single university participated in this study, with participants divided into 40 groups of five. Participants completed 30-minute trial simulation tasks prior to beginning the actual group simulation task, which involved managing cities using SimCity 4 and basing the task on real-life decision-making situations (Curral et al., 2016).

Prior to completing the tasks, Curral et al.'s (2016) experimental groups were given information corresponding to the complexity theory of leadership, indicating the sort of leadership behaviors that would enable them to perform better. For instance, participants were told to share knowledge and work as team in the decision-making process. Compared to when complexity leadership was not applied, the experimental groups achieved higher efficiency over time. This study emphasized the importance of viewing leadership as a collective process, contradicting traditional leadership theories and showing that complexity leadership increases efficiency in group tasks (Curral et al., 2016).

Ng (2015) took a unique approach toward studying complexity theory by examining how the theory unfolds in the realm of education. Like economies, schools in

Singapore have become more complex, thus needing a complex and dynamic model of leadership. Ng (2015) collected data including school reports, observations and interviews. Results showed that process-driven models generated success and knowledge, specifically when participants were involved in the learning and action learning processes. Educational organizations, like other types of organizations, should reform to mirror the complexity theory of leadership (Ng, 2015)

A major implication of Ng's (2013) was that educational programs should be driven by students rather than by faculty. This finding supported the literature on the complexity theory, concluding that leadership is present at all levels, not just at traditional levels (in this case, the faculty), and that thinking of leadership as a multifaceted system leads to better individual and system outcomes (Ng, 2015). In today's organizations, innovations emerge from the work of many individuals, with success no longer being defined by a single leader (Nootebooom & Termeer, 2013). The complexity theory of leadership aids in the development of complex innovations and favorable systems outcomes. Additionally, the complexity theory better suits a knowledge-based economy (Uhl-Bien et al., 2007).

Uhl-Bien et al. (2007) discussed the complexity theory of leadership and how it contrasts with the traditional top-down models of leadership, addressing the complexity theory's emphasis on viewing organizations as dynamic, interactive processes. Complexity theory of leadership offers insight into the natural of successful organizations in light of the shifting economic basis and the move from an industrial era to a

knowledge-based era. Complexity theory shifts the focus from managerial positions to a perspective that encompasses all levels of an organization, since the theory presupposes that leadership occurs at all levels (Uhl-Bien, 2007).

The knowledge-based era poses by many new challenges to which organizations must be able to adopt and without which adaptation and growth cannot occur (Uhl-Bien, 2007). Support for the complexity theory of leadership is still in its infancy, with much research focused on the past industrial era and rather than on the current issues resulting from the shift to a knowledge-based era. In order to succeed today, leaders must move beyond the theories of the industrial era, demonstrating an openness to new theories such as the complexity theory of leadership (Uhl-Bien, 2007).

The complexity theory of leadership is a leadership model that emphasizes the generation of learning, creativity, and adaptive abilities, which Clarke (2013) identifies as complex adaptive systems (CAS). This conceptual model includes three interrelated leadership roles: adaptive leadership, administrative leadership, and enabling leadership. This delineation of multiple leadership roles shows the dynamic relationship among the various components of an organization and the dynamics of CAS (e.g., Clarke, 2013).

Clarke (2013) described complexity leadership as a leadership style that emphasizes the systemic nature of organizations and the existence of many interrelations that make up an organization (Clark, 2013). To support complexity leadership in an organization, therefore, leaders must embrace interactions and interrelationships among all individuals in the organization. Additionally, Clarke's (2013) model of complexity

leadership included shared leadership as a component of the complexity leadership process that is crucial for generating adaptive organizational responses. Without shared leadership, adapting to complex situations becomes difficult.

Shared leadership as a key dimension of the process that reflects the distributed nature of leadership processes necessary for generating adaptive organizational responses. Shared leadership had positive effects on organizational performance (D'Innocenzo et al., 2016) as a result of enhancing team members' sense of trust (Drescher et al., 2014) and by promoting knowledge sharing and participative decision-making (Nazir & Shah, 2014). Shared leadership has been shown to be increasingly vital for today's organizations and has been shown to increase the sense of trust among employees (Drescher et al., 2014). Drescher et al. (2014) examined whether shared leadership within groups promoted a greater sense of trust and if the trust increased group performance. The researchers found that shared leadership was positively correlated with group performance through the increased sense of trust and that this relationship held true over time. The study highlighted the multi-layered process of group success, aligning with complexity theory premises that leadership is present at all levels of an organization or team (Drescher et al., 2014).

Shared leadership has also shown to enhance organizational ambidexterity when examined in a sample of 202 organizations by Mihalache, Joansen, Van den Bosch, and Volberda (2014). The researchers measured the impact of a management team's shared leadership on organizational connectedness and decision-making processes, examining a

total of 202 organizations in the study (Mihalache et al., 2014). They focused their

research on organizational ambidexterity (being able to exploit successes while also

exploring opportunities), shared leadership, cooperative conflict management, decision-

making comprehensiveness, the centralized structure of decision-making, and

connectedness. Results showed that shared leadership encouraged ambidexterity by

fostering a cooperative conflict management style and by strengthening comprehensive

decision-making. Specifically, higher levels of shared leadership by management teams

predicted higher levels of ambidexterity. This study demonstrated that shared leadership

can help companies adapt to and overcome tensions and that shared leadership may be

especially important when dealing with the tensions of exhibiting ambidexterity (the

tensions between engaging in exploitation as well as exploration). Results also

demonstrated that organizational structure impacted the success of leadership, a finding

aligned with complexity theory's contention that interactions among variables cause

organizations to succeed since the focus is not solely on individual leaders (Mihalache et

al., 2014).

Knowledge sharing is another component of complexity leadership and shared

leadership. Knowledge sharing has been shown to lead to better decision-making (Nazir

& Shah, 2014). Nazir and Shah (2014) examined knowledge sharing, leadership styles,

and participative decision-making and the impacts of those factors on organizational

performance (Nazir & Shah, 2014). After our nation's transition to the knowledge or

information era, focus shifted to retaining knowledge rather than sharing knowledge,

despite the fact that knowledge sharing and complexity leadership may be critical for organizational and individual performance. Complexity theory of leadership may help guide organizations in this new direction.

In summary, complexity leadership deemphasizes individual attributes and instead emphasizes team work, based on the presumptions that leadership is a dynamic process and that organizational success today is not related to the successes of individual leaders (e.g., Greer-Frazier, 2014). Clarke (2013) explained that by building social capital, an organization gains the ability to work as a collective unit. Notably, individual factors interact with organizational factors to create a complex system and produce leadership at many levels. Complexity theory of leadership advances a fundamentally different approach toward conflict compared with traditional leadership and management models. Rather than viewing conflict as something to be avoided or reduced, complexity theory acknowledges conflict as the source of innovation, with innovation being the key to adaptive responses (Arena & Uhl-Bien, 2016).

The complexity model of leadership differs from traditional and bureaucratic leadership models, projecting leadership as interactive and dynamic and based on adaptation to pressures (Baltaci & Balci, 2017). Complexity theory stresses the importance of organizational processes and the use of adaptive problem solving (Tsoukas, 2017), with adaptive problem solving regarded as crucial for organizational success and effective leadership. Shared leadership as a key dimension of the process, which reflected the distributed nature of leadership processes necessary to generate

adaptive organizational responses. Shared leadership had positive effects on organizational performance (D'Innocenzo et al., 2016), which was achieved by enhancing team members' sense of trust (Drescher et al., 2014) and by promoting knowledge sharing and participative decision-making (Nazir & Shah, 2014).In contrast to traditional leadership theories, complexity theory moves away from the top-down approaches toward leadership, acknowledging that situations are not always stable and predictable (Ochara, 2017). In light of the shifting economic basis and the move away from an industrial era toward a knowledge-based era, complexity theory of leadership offers insights into the nature of successful organizations.

The Importance of Management Information Systems in the Current Economy

Information systems impact customer value as well as organizational performance (Ainin et al., 2015). MIS is one organizational process that is increasingly critical for coordinating and tracking business operations in all areas of employment and has been shown to be related to organizational success (Ainin et al., 2015). The use of information systems has been linked to increased performance (Al Shobaki & Naser, 2016; Naser & Al Shobaki, 2016; Shao et al., 2016). The use of MIS functions positively influences customer value, which is, in turn, positively related to organizational financial performance. (Ainin et al., 2015).

Naser and Al Shobaki (2016) examined the impact of MIS on the performance of a company located in Gaza. A total of 360 individuals participated in the study of computerized MIS. Results showed that resources such as physical software and

individual and organizational resources had significant positive correlations with the computerized management information systems and the development of performance. The study highlighted the need for strengthening MIS, supporting previous literature and complexity theory remises that information systems must be complex in order to effectively manage complex organizational structures in a complex economy. Researchers emphasized the importance of ensuring that staff members are aware of the vital role of information systems and are involved in all aspects of their design. Such conclusions supported complexity theory's notion of leadership as being present in various levels of an organization (Naser & Al Shobaki, 2016).

The Interaction between Leadership Processes and Management of Information Systems

While few researchers have explored the interrelationship between leadership and MIS, Petter et al. (2013) examined information systems in general and identified multiple components that increase success of information systems: enjoyment, trust, user expectations, attitudes towards technology, organizational roles, involvement, developer relationships, expert knowledge, support form management, leadership processes, and organizational competence. Those findings demonstrate that information systems align with the dynamic nature of organizations in general and with their many interconnected components. The findings also align with complexity leadership principles (Petter et al., 2013).

Benbya and McKelvey (2006) examined the combination of information systems with complexity theory. In the present economy, complex systems must adapt to the ever-changing environment. If they are not handled appropriately, information systems do not succeed. The authors identified seven notable principles of adaptation required for organizational successes and information systems successes: adaptive tension, complexity, change rate, modular design, positive feedback, causal intricacy, and coordinated rhythm. Interestingly, data contradicted the complexity theory, showing that top-down information system processes are unlikely to serve organizations well and do not facilitate proper adaptation to tensions and changing environments because they focus on the environment and situations as static. Benbya and McKelvey (2006) demonstrated that organizational systems do not operate in a completely predictable way and are in a constant flux from stability to chaos and to the various points between those two states. In conclusion, information systems should mirror the complex nature of organizations in order to provide effective information management (Benbya & McKelvey, 2006).

Ineffective MIS can lead to organizational bankruptcy (Dwivedi et al., 2015). Researchers have found that information system successes and failures result from collaboration and change management process. Effective management, change implementation, and collaboration have been shown to mitigate disruptive effects of information systems. Information technologies must work as systems and must be aligned with organizational processes (Dwivedi et al., 2015), a concept that aligns with the

complexity leadership idea that leadership is a multi-process system with many working parts that must be taken into consideration.

In conclusion, information systems are becoming more widespread in organizations today and are beneficial for organizational performance (e.g., Anin et al., 2015). Information systems help to coordinate and track business operations in all areas of employment (Ainin et al., 2015) and they are related to increased customer value and subsequently to increased organizational financial performance (Ainin et al., 2015). Research also has shown that resources such as physical software as well as individual and organizational resources are significantly positively correlated with the computerization of management information systems and with the development of performance (Naser & Al Shobaki, 2016).

Information systems are complex; as are the organizations they are part of. As such, they should align with organizational processes in order to produce the highest levels of success (Petter et al., 2013). If information systems are not designed to align with the multiple layers of an organization, the organization will be unable to adapt to tensions. Literature has shown that organizational systems are actually in a constant flux between stability and chaos and do not operate in completely predictable ways. Information systems must mirror the complex nature of the organizations they are part of in order to permit leaders to effectively manage the organizations (Benbya & McKelvey, 2006).

The Importance of Manager Perceptions

Thus far, we have discussed the changing nature of today's economy and organizations as well as components of the complexity theory of leadership and information systems. Also critical to complexity leadership is the perception of leadership from the supervisor's viewpoint. Although technically in a leadership role, leaders of today do not seem to think of themselves as typical leaders (Fairman & Mackenzie, 2015); therefore, manager perception of leadership is an important component to consider when evaluating a leadership theory. Mackenzie (2015) reviewed seven different schools, observing that teachers valued collaboration, relationships, and trust in their leadership, but did not identify themselves or others as leaders (Fairman & Mackenzie, 2015). This aligned with the complexity theory concept of leadership as a collaborative process with leaders existing at all levels of an organization.

Research has shown self-awareness of supervisory performance and skills to be important factors for workplace civility, safety and effective leadership and for addressing supervisor burnout, emotional exhaustion, and personal accomplishment (Hernandez, Luthanen, Ramsel & Osatuke, 2015). Hernandez et al. (2015) examined supervisor self-awareness in 3,764 Veteran's Health Administration supervisors representing 33 separate occupations. The researchers collected data longitudinally from 2008 through 2012 in the form of self-reported measures of burnout, managerial self-awareness, psychological safety, workplace climate, and civility and covering issues including co-worker support and conflict resolution. Results showed that when

accounting for the level of supervisor self-awareness, higher levels of self-awareness in supervisors were correlated with more favorable workplace climate ratings. Additionally, supervisors who exhibited high self-awareness were more aware of their feelings and less likely to show side effects of burnout, decreasing the likelihood of burnout impacting their ability to manage. In sum, managerial perceptions are important to the manager individually as well as to the management process (Hernandez et al., 2015).

Other research has examined managers' perceptions of managerial self-efficacy (Fast, Burris, & Bartel, 2014). In the first part of the study conducted by Fast et al. (2014), 54 managers completed self-efficacy evaluations. At the same time, 304 employees completed measures on perceived managerial solicitation of input or voice and on how employees voice their opinions. Results of the first part of the study showed that managerial self-efficacy and employee ratings of how managers solicit input from others was significantly related to employees' voicing of their opinions. In the second part of the study, Fast et al. (2014) examined whether managers who displayed low self-efficacy would both solicit less input from employees and react more negatively when employees voiced opinions. The results were nearly evenly divided, with 65 participants showing high-self efficacy and 66 participants showing low self-efficacy. As predicted, low self-efficacy was related to soliciting less feedback/input and reacting more defensively when input was received. The study showed that supervisory self-efficacy is important to leadership and to subordinates (Fast et al., 2014).

Bias would be of concern if studied had focused solely on manager perceptions of leadership were examined, but research has shown that both interactions of managers and employee perceptions of leadership are important to job satisfaction (Černe, Dimovski, Marič, Penger & Škerlavaj, 2014). Analyses of more than 20 managers and 171 of the team members reporting to them revealed that congruence between manager perceptions and employee perceptions of leadership should be present at high levels in order to predict the highest amount of job satisfaction (Černe et al., 2014). Additionally, research has shown that supervisors' self-ratings differ from the ratings given to supervisors by others (Braddy, Gooty, Fleenor, & Yammarino, 2014; Hernandez et al., 2015). Multiple sources should be used to evaluate the success of the complexity theory of leadership.

The Importance of Employee Perceptions

Employees play a role in the interactive, dynamic complexity leadership process. Not surprisingly, employee perception is important in the workplace. For instance, employee perception of organizational support has been shown to be related to job satisfaction and job turnover (Carlopio & Gardner, 1995). Kang, Gatling, and Kim (2015) studied employees' perceived supervisory support and found that the perception of support from supervisors was positively correlated with employees' organizational commitment and job satisfaction. However, commitment to one's job did not significantly relate to job satisfaction, even though commitment did decrease the likelihood of turnover. This showed that commitment alone may help with retention but

not satisfaction – that feeling supported by supervisors is more important than xxxxxx for feeling satisfied in the workplace (Kang et al., 2015).

Workplace perceptions can also impact performance; for instance, Zohar and Polachek (2014) examined the relations among perception, climate and performance, and found that when given feedback after a safety and productivity-related task, perception of feedback and increased communication impacted performance. Employee perceptions of information sharing, an important component of complexity leadership, can improve performance in the workplace (Dean, Dean, & Rebalsky, 1996). Similarly, perceptions of working environments and positive relations among co-workers positively relate to employee engagement, which in turn can lead to improved performance (Anitha, 2014). In summary, external factors such as climate and others in the organization can be interrelated with employee perceptions and consequently impact employee performance, a conclusion that aligns with the complexity theory idea that multiple parts – internal factors such as perceptions and external factors such as climate – can connect to impact performance.

To be able to perform efficiently, it has been discussed that change, specifically learning from and adapting to change, is necessary. Georgalis, Samaratunge and Kimberley (2015) examined employees' perception of fairness (as exhibited by managers), organizational change, and the leadership-member exchange (an important component of knowledge sharing and complexity leadership). The researchers found that

the leadership-member exchange impacted resistance to organizational change through employees' perceived fairness.

Mencl and Lester (2014) examined the employee perceptions among multiple generations in order to identify issues based on increased diversity of today's workforce. Results from their literature review showed that for today's workforce, continuous learning (a component of complexity theory) is important because of the addition of younger generations into the workforce, although this variable was found to be important to other generations as well. Similarly, results indicated the importance of information sharing, or feedback, for younger generations in today's workforce. Lastly, employees' perceptions of these variables impacted how they viewed their organization, which can in turn impacted organizational effectiveness. Supervisors should consider these factors in the leadership process to create the best working environment for their employees, a concept that also aligns with the complexity theory's proposition that environment, people, and perceptions all interact to create a successful organization. In sum, neither the economy nor the workforces were traditional, emphasizing the need for non-traditional leadership styles, namely complexity leadership (Mencl & Lester, 2014).

In conclusion, the economy has changed from a production-based economy to a knowledge-based economy that emphasizes social capital (Clarke, 2013). It is critical that leaders adjust their leadership styles to accommodate this change. In order to be successful, organizations must exhibit knowledge sharing and interconnectedness. Today's workforce is dynamic, ever-changing, and made up of multiple interrelated

moving parts. Not surprisingly, individual organizations too are dynamic and changing, and therefore need a non-traditional approach to leadership.

The complexity theory of leadership emphasizes human capital and leadership as a system – a shift from traditional leadership's emphasis on individual leadership factors or individual leaders. The theory posits that through building social capital, the organization gains the ability to work as a collective unit, with individual factors interacting with organizational factors to create a complex system and produce leadership at many levels (e.g., Baltaci & Balci, 2017; Clarke, 2013). Benefits of complexity leadership include the ability to engage in adaptive problem solving and to efficiently handle change and tensions (Baltaci & Balci 2017; Ochara, 2017). Another new component of today's workforce is the increasing popularity of the use of management information systems. These systems have been linked to increased performance and success (Ainin et al., 2015). It is critical that these systems mirror the complex nature of the organization in order for leaders using these systems to be able to effectively manage the organization. Additionally, complexity leadership may be more easily integrated into today's organizations if integrated with MIS.

Lastly, employee perceptions of various components of the workplace – including climate, supervisory support, job satisfaction and knowledge sharing – influence employees, leaders, and organizations (Carlopio & Gardener, 1995; Kang et al., 2015). Therefore, leaders need to incorporate their employees' perceptions into their leadership process. The complexity theory accounts for these important factors and for the

interactions among these factors, making it the most beneficial leadership theory for today's organizations.

The Study

There is a gap in existing literature regarding the complexity theory's influence on organizational success as it relates to the MIS function. Organizations need insight regarding how to monitor and manage in today's economy for organizations to be successful and avoid crises (Battiston et al., 2016). Battiston et al. (2016) found that complexity theory promotes system-wide success and helps leaders anticipate and manage future problems. Complex organizations and systems often reveal a loss of resilience before a major transition, making them vulnerable. Complexity models have been shown to help predict warning signs and anticipate problems.

Also important to complexity theory is the emphasis on networks and on working as a unified organization rather than as individual parts (Battiston et al., 2016). Complexity theory also provides greater insight into how systems are stabilized through the interconnectedness of individual decisions, through the interactions of individuals' decisions, and through behaviors. Future research should explore interrelationships in the workplace that reflect the complexity theory of leadership and should examine how organizational processes in a complexity model of leadership impact an organization's ability to engage in adaptive problem solving. Additionally, few studies have explored how such systems interact with leadership styles, namely complexity leadership, in the workplace (Battiston et al., 2016).

With this study, I explored employee and manager perceptions of complexity theory of leadership to get a deeper understanding of how complexity leadership unfolds in today's knowledge-based economy. I examined how supervisors and employees perceive the expression of complexity leadership through MIS processes and how they perceive the role of MIS in relation to the three types of complexity leadership (administrative leadership, adaptive leadership, and enabling leadership). I also examined how managers and employees perceive other interactive processes within the organization in relation to the three complexity theories of leadership and how managers and employees perceive the impact of complexity theory of leadership practices on their organization's adaptive responses and organizational performance.

Failure to lead effectively in the current knowledge-based economy can have deleterious effects on organizational performance and threaten an organization's success and survival (D'Innocenzo, et al., 2016; Hoch, 2013). Enacting effective leadership practices is especially important for small businesses, half of which fail within the first five years of operations (U.S. Small Business Association, 2016). Therefore, I examined manager and employee perceptions of complexity leadership and investigated the ways that complexity leadership interacts with management information systems by interviewing 15-20 employees and managers. I focused on a small business due to the failure rates of small businesses. This study increased knowledge and understanding of how the complexity theory of leadership unfolds in the workplace through MIS use among managers and employees; how managers and employees perceive complexity

leadership; and how these processes affect adaptive problem-solving and organizational performance. Additionally, this study showed that improving adaptive responses and organizational performance could increase competitiveness of organizations in the current knowledge-based economy (Clarke, 2013; Geer-Frazier, 2014).

Significance of the Study

This study is important for today's organizations because it provides insights for managers and employees regarding effective strategies for working as teams and networks in the workplace. The study was unique in its perspective, which addressed perceptions of both managers and their employees. Managers, supervisors and leaders can use this study's findings to gather practical leadership guidance for fostering their organizations' success and promoting the well-being of their employees (Saleh & Hu, 2016). This study provided support for the use of non-traditional leadership theory, demonstrating the benefits of responding to the changing economy and shifting organization dynamics. The study also provided further insight into the factors that lead to organizational success in a newly evolved knowledge-based economy.

The results of this study provide improved understanding of the benefits of incorporating MIS into today's organizations and examined whether complexity theory can be more easily incorporated into today's organizations and can prove more successful when integrated into an organization's management information system. The implications of the study include using popular management information systems as an integrative tool for fostering complexity leadership styles. By exploring how complexity leadership and

MIS are combined, the study increased understanding of how leaders perceive the complexity leadership process through their MIS practices, thereby helping supervisors to develop MIS systems that align with complexity theory and enabling a smooth transition from traditional to complexity leadership.

Summary and Conclusions

In conclusion, the changing economy and new focus on social capital in today's organizations call for new leadership styles in order for organizations to be successful. The changing environment calls for a non-traditional style of leadership that better aligns with today's organizational needs and values. There is a new emphasis on leadership as a dynamic, multi-level process that helps organizations better adapt to changes, challenges and problems.

Imperial et al. (2016) identified many problems with using traditional leadership, leading me to examine complexity leadership as an alternative. By implementing more effective leadership practices in a complexity paradigm, in combination with effective leadership as expressed through MIS, leaders can foster organizational conditions that are supportive of adaptive problem-solving and team performance. This study filled the gap in research regarding the combined use of complexity leadership styles and MIS. Improving adaptive responses and organizational performance may increase competitiveness of organizations in the current knowledge-based economy (Clarke, 2013; Geer-Frazier, 2014).

Chapter 3: Research Method

In this study, I explored the general problem associated with failures to lead effectively in the current knowledge-based economy and the resulting deleterious effects on organizational performance and threats to organizational viability (D'Innocenzo et al., 2016; Hoch, 2013). I focused specifically on the lack of understanding regarding the interaction between leadership functions and MIS processes, a reality that means managers and leaders are poorly equipped for effective leadership in the current knowledge-based economy (Petter et al., 2013). To address this problem, I explored manager and employee perceptions of how leadership in the current knowledge-based economy is conducted through MIS and examined the ways that such leadership influences an organization's adaptive responses and performance. I used a qualitative methodology with a phenomenological research design to address the research problem.

A qualitative methodology was suitable for this study because of my focus on exploring a phenomenon in the context of its natural environment (Merriam & Tisdell, 2015). I chose a phenomenological research design because I intended to explore the lived experiences of participants in the context of the phenomenon. In this chapter, I discussed the details of the methodology, with the contents of the chapter addressing (a) the rationale for the research design, (b) the researcher's role in the study, (c) the selection of respondents, (d) the instruments used in the study, (e) the procedures for

collecting and analyzing data, (f) issues of trustworthiness, and (g) consideration of ethical issues.

Research Design and Rationale

In this qualitative phenomenological study, I explored the perceptions of IS managers and employees regarding leadership and its impact on the organization's adaptive responses and performance in the knowledge-based economy. I used a single overarching research questions and three secondary subquestions to address the research problem:

RQ1: What are managers' and employees' lived experiences about leadership that influence their organization's adaptive responses regarding technology and performance in the knowledge-based economy?

SQ1: What are the employees' lived experiences that show the effect of their managers' leadership skills in the information system departments on the organization?

SQ2: What are the managers' lived experiences that show the effect of personal leadership skills on their organization's information system departments?

SQ3: What are the managers' and employees' lived experiences that show the effect of leadership practices on their organization's adaptive responses and organizational performance?

I chose a qualitative methodology for this study, in line with my intent to explore a phenomenon in its natural setting (Merriam & Tisdell, 2015; Silverman, 2016). As Merriam and Tisdell (2015) explained, researchers use qualitative studies to conduct extensive investigation about a specific phenomenon in order to gain further knowledge or develop a more focused practice that is sensitive to the research participants. A qualitative methodology is appropriate when a researcher aims to explore a phenomenon in-depth through the experiences and perceptions of individuals (Silverman, 2016). Collecting in-depth and rich data was necessary for fully addressing the research questions of this study. Given the scant existing research on the complexity theory of leadership, I determined to use a qualitative method to take advantage of that method's strength in generating increased understanding of understudied phenomena (Ritchie & Ormston, 2013).

I determined that a quantitative methodology would not be appropriate for this study because the research questions did not require the establishment of any relationships, associations, or causation between variables (Katz, 2015). Moreover, collecting numerical data would not have been sufficient for expressing answers to the guiding questions of this research. I rejected mixed methods research as unsuitable for this study as well, because answering the research questions did not require collecting and analyzing a combination of numerical and nonnumerical data (Mertens, 2014).

I selected a phenomenological research design for this study, given my purpose of studying the lived experiences of individuals in order to understand a given phenomenon

(see Moustakas, 1994). By conducting in-depth interviews with managers and employees

of a small business, I was able to explore the managers' and employees' complex and

varied perspectives on MIS through their own experiences (see Moustakas, 1994).

Through phenomenology, a researcher can make meaning out of the lived experiences of

participants (Jundt, 2015).

Role of the Researcher

I served as the central instrument for data collection, recruiting participants,

collecting data, and conducting analysis to answer the guiding questions of the research.

In the recruitment or sample selection phase, I contacted eligible individuals to identify

those who were both eligible and willing to participate in the study. To eliminate any

conflict of interest between me and selected participants, I limited participation to

individuals who are not part of my personal social network. Therefore, I eliminated

family members, friends, relatives, coworkers, and acquaintances as potential

participants.

To accomplish data collection, I conducted interviews and made observations. For

the data analysis phase, I personally coded the data and identified emergent themes from

the data. I understood that I could be influenced by personal biases in collecting and

analyzing the data, particularly those biases that could be inherently developed as a result

of my in-depth exploration prior to study implementation. To minimize the influences of

any personal biases, I listed all possible sources of bias in relation to the topic of the

study (Shepperd, Bowes, & Hall, 2014). Through this process, I made every effort to improve awareness and caution regarding any potential personal biases.

Methodology

Participant Selection Logic

The target population of this study consisted of information system managers and employees of a small- to medium-sized enterprise. These managers and employees had first-hand experiences related to the phenomenon being studied, making them ideal individuals from whom I could gather insights regarding the central phenomenon, in this case, the impact of leadership on the organization's adaptive responses and performance in the knowledge-based economy. Nearly half of the employed population of the United States work for small- to medium-sized enterprises, with more than 55 million workers being employed in businesses of that size (Caruso, 2015).

From the target population of managers and employees in small- to medium-sized enterprises, I recruited a sample based on a set of eligibility criteria. The inclusion criteria for eligibility included (a) information system managers or employees of a small- to medium-sized enterprise in the United States, and (b) individuals who had been working for a small- to medium-sized enterprise for at least 3 years. Managers had to meet an additional criterion of having been in management for at least 2 years. Potential participants were excluded based on this exclusion criteria: (a) managers or employees who would be retiring within the next 6 months, and (b) managers or employees with

self-declared disabilities or who belonged to at-risk populations such as pregnant women, people with mental illnesses, or people with terminal illnesses.

I recruited five information system managers and five employees working with these managers. Qualitative phenomenology eliminates the need for recruiting large sample sizes (Malterud, Siersma, & Guassora, 2016). Instead, qualitative research must simply ensure that data has reached saturation. The saturation point of data in a qualitative study refers to the point during data collection at which significant changes in data codes no longer emerge with the addition of more samples (Fusch & Ness, 2015; Malterud et al., 2016; Tran, Porcher, Tran, & Ravaud, 2017). Fusch and Ness (2015) suggested that a sample of six can be adequate for reaching data saturation provided the participants have imparted complete and valid data (Fusch & Ness, 2015). I was prepared to recruit more than six participants if I did not reach data saturation with that number.

I used a purposive sampling technique to recruit potential participants. Purposive sampling is often used in qualitative research studies, and I deemed it to be appropriate for this study because I aimed to investigate participants who had familiarity with the focus area of the research (Etikan, Musa, & Alkassim, 2016; Ishak & Bakar, 2014). I selected participants who met the inclusion criteria and did not fall under any of the exclusion criteria.

Instrumentation

Data sources for this study consisted of (a) semistructured interviews, and (b) observations. I conducted semistructured, in-depth interviews with information system

managers and employees of one small- to medium-sized enterprise using the complexity

theory of leadership as a conceptual framework. I also observed interactive processes

between the employees and managers in order to validate data from interviews.

Semistructured interview guide. The semistructured interviews served as the

primary instrument for data collection. I collected data regarding the lived experiences of

managers and employees in a selected small- to medium-sized enterprise, using a

prepared interview guide during the process. The interview guide consisted of questions

that were aligned with the research questions of the study (Kallio, Pietilä, Johnson, &

Kangasniemi, 2016). By using an interview guide, a researcher can maintain the structure

and flow of the interviews in alignment with the topic of study (Kallio et al., 2016). I

assigned at least three questions in the guide to correspond to each of the research

questions, thereby ensuring that each question was explored in-depth.

To ensure the trustworthiness of the interview guide, I submitted the guide to

review by panel of experts, in this case, my dissertation committee members. These

experts evaluated the appropriateness of the structure, word usage, and content of the

items in the interview guide. Panel members provided feedback based on their expert

opinion regarding the completeness of the items in the interview guide in light of

addressing the research questions of the study. Moreover, panel members provided expert

feedback about the appropriateness of the language and word usage in terms of the

intended audience for the questions. All proposed changes were discussed and agreed

upon during the panel review before the interview guide was finalized for use in the study.

Observation guide. I conducted observations of participating managers and employees, focusing on interactive processes between the individuals. To conduct observations, I developed an observation guide that included the different aspects I intended to focus on during the observation sessions. My observations were focused on leadership techniques and followers' behavior in my observations of managers' behavior, employees' behavior, and interactions between the two groups. I used data collected through observations to confirm data collected through interviews.

The same group of experts reviewed the researcher-developed observation guide as well as the interview guide. Panel members examined the observation guide to determine whether its questions appropriately captured the aspects of manager–employee interaction necessary for adequately addressing the research questions and verifying the information collected from the interviews. The experts made recommendations for changes to the observation guide before the guide was finalized for use during the study.

Pilot Study

As this was a qualitative study, I conducted a pilot study with two or three participants to test the participants' understanding of the instructions and to test the survey instrument. Using a field test ensured trustworthiness of the study (Sternberg et al., 2016). To conduct the field test, I recruited three participants with the same characteristics required for actual participation in the study. I interviewed each pilot study

participant using the questions in the interview guide. After the mock interview,

participants evaluated each interview question for ease of comprehension and clarity of

expression. The participants also provided feedback about their perceptions of possible

problems with the questions in the guide. I asked the pilot test participants the following

questions and subquestions for purposes of evaluating the items in the interview guide:

- Do you understand the questions in the interview guide?

  o How can the specific questions be modified for it to be easily understood?

- Are the questions sufficiently clear to elicit the desired information?

  o How can the specific questions be modified for improved clarity?

- Are the questions comprehensive enough to cover the information needed to
  answer all the research questions of the study?

  o What other topics must be included to cover all the needed information for
    this study?

- Do the questions invade the privacy of the interviewees?

  o What changes may be made to lessen these instances?

After conducting the mock interviews, I determined the interview guide's

reliability by identifying test–retest reliability. I assessed whether the items in the

interview guide aligned with the objectives of the study and also eliminated redundant

questions in the interview guide. I used the insights gained from the field test to improve

the interview questions.

Procedures for Recruitment, Participation, and Data Collection

      Recruitment procedures. Before recruiting participants, I presented a proposal

to the university's Institutional Review Board (IRB), seeking permission to implement

the procedures for the study with IS managers and employees in a small- to medium-

sized enterprise. After acquiring permission from the IRB (Walden approval no. 05-25-

18-0013595), I met with the head of the selected small- to medium-sized enterprise to

outline the purpose and potential benefits of conducting the study. During the discussion,

I requested permission to conduct recruitment and data collection with the organization's

IS managers and employees. I began recruitment only after obtaining that permission.

      To begin recruitment, I personally visited the facility or workplace of the

information system managers and employees of the small- to medium-sized enterprise.

My invitation to potential participants contained the following information: (a) purpose

of the study, (b) eligibility criteria, and (c) potential benefits of the study. I attached

informed consent forms to the invitation. The informed consent included the following

information: (a) title of the study, (b) purpose statement, (c) tasks for participants, (d)

notice of potential but minimal risks to participants, (e) procedures for confidentiality and

data security, (f) recording of interviews for transcription purposes, (g) voluntary nature

of any participation, and (h) contact information for the researcher. Individuals who

agreed with the contents of the informed consent signed the last part of the form and

returned the signed copy to me during a second visit, which took place one week later.

Only those who affixed their signatures to the consent form were asked a series of

questions designed to verify their eligibility based on the inclusion and exclusion criteria and were then scheduled for interviews and observation.

Data collection. I used two data collection techniques, semistructured interviews and observation sessions. The methods are described below.

Interviews. I prepared the necessary materials – paper, pen, audio recorder, and interview guide – for each interview appointment. Each interview lasted for 45-60 minutes and was conducted inside the participants' workplace in order to ensure their convenience and comfort. With participants' permission, I recorded all interviews. I began each interview by discussing the study topic and explaining the planned flow of the session. After the introduction, I moved into the question-and-answer portion of the interviews, using the items included in the interview guide. I followed each answer with a maximum of four follow-up questions in order to gather additional detail and to gain in-depth understanding of the phenomenon based on the answers of the information system managers and employees. Upon completion of the interview questions and follow-up questions, I gave participants the opportunity to ask questions for clarification about the study. After addressing any questions, I set each participant's scheduled time for observation and thanked them for their time.

Observations. I conducted observations with participants to validate the information obtained from the interviews. Each observation lasted for 2 hours. I had writing materials and the prepared observation guide on hand throughout each observation. I conducted observations from a comfortable distance in order to avoid

interfering with the activities of the participants. I recorded notes on observation sheets and made sure to focus on the guiding questions throughout each session. Upon completion of each observation, I approached the manager or employee to inform him that I had finished the observation session. I made a soft copy of the observation notes to load into the NVivo software.

Data preparation and organization. Two days after each interview, I provided participants with opportunities to the interview transcriptions for accuracy. I sent a copy of each interview transcript to the respective participant via email, with instructions to review the contents and provide feedback about the accuracy and correctness of the information. Through this process, called member checking, I confirmed the accuracy of my transcriptions and allowed participants to suggest changes or clarifications (Morse, 2015). I discussed any inconsistencies by phone with each participant to determine whether changes should be made to the transcripts. After performing member checking of transcripts, I made copies my observation notes into word processing files and uploaded the files to the NVivo software.

Data Analysis Plan

I used thematic analysis to systematically determine the emergent themes that were relevant to the study (see Braun, Clarke, & Terry, 2014; Merriam & Tisdell, 2015). Braun et al.'s (2014) thematic analysis includes six steps: (a) data familiarization, (b) code development and coding, (c) theme development, (d) theme revisions, (e) theme finalization and theme definition development, and (f) report generation. I implemented

the first four steps separately for each of the data sources. After analyzing all the data

separately for the first four steps, I performed the fifth and sixth steps one time for all

data.

During the first step, I reviewed the data twice to become familiar with the

information collected. During the second round of reading, I highlighted or marked the

text and phrases that directly related to the research question and phenomenon of interest.

The basis for determining the relevance of the data was whether the information could

directly respond and solve the main questions or the phenomenon of the study. In the

second step, I developed a coding scheme (Braun et al., 2014). I performed open coding

to code a small size of data (e.g., five interviews) to develop the coding scheme for the

data. Open coding is the process of identifying relevant terms to reduce data into

manageable segments (Olson, McAllister, Grinnell, Walters, & Appunn, 2016). Based on

the initial list of codes, the remaining data were coded, with new codes added if

necessary.

In the third step, I grouped similar codes to form a theme. The themes had to

directly address the research questions of the study. Each group was labeled to come up

with the list of initial themes (Braun et al., 2014), after which I evaluated the need to

make changes to the themes, combining small groups or decomposing groups into

smaller and more appropriate themes. In the fourth step, I determined the final list of

themes for each of the data sets. The major themes were identified based on the

frequently occurring themes. Themes with lower frequency levels were determined to be

minor themes. For each theme, I developed a description. All four of these analysis steps were performed for the set of observation data as well.

In the fifth step, I consolidated the themes from all the data sources and compared the themes with one another to develop the final group of themes from the two data sources. The major themes were based on the themes that were present in both of the two data sources. After analysis I developed the report that is presented in Chapter 4.

Issues of Trustworthiness

Researchers must seek to improve the trustworthiness of all qualitative, phenomenological studies (Elo et al., 2014; Fusch & Ness, 2015). To establish trustworthiness, researchers must consider four aspects: credibility, transferability, dependability, and confirmability. I implemented different procedures to establish these four criteria for trustworthiness within the study.

Credibility

Credibility refers to a researcher's level of confidence about the truthfulness of the data and interpretations (Lincoln & Guba, 1985). To improve the credibility of the data, I performed member checking with the participants (Morse, 2015). Through the process of member checking, I collected feedback from the participants regarding the correctness of the transcripts and made any necessary changes to confirm the accuracy and credibility of the data. Moreover, I used multiple data sources for triangulation to improve credibility (Hussein, 2015).

Transferability

Transferability refers to the extent to which the findings will be applicable or transferable to other populations and other contexts (Lincoln & Guba, 1985). To ensure that data had high levels of transferability, I wrote complete explanations and discussions of the different methods and processes that would be used in implementing this phenomenological study. Through the complete discussion of the procedures, I can assist future researchers in identifying the findings that are applicable to other populations or settings. However, the study cannot be directly transferable to all environments given the small sample size used.

Dependability

While quantitative studies must demonstrate reliability, qualitative studies must demonstrate dependability of findings (Lincoln & Guba, 1985). I audited the methods for the study, producing an audit trail that improved the dependability of the data (Lincoln & Guba, 1985). I provided a complete and detailed documentation of the inputs and outputs of each of the processes implemented for recruiting participants, collecting data, and analyzing the data collected.

Confirmability

Ensuring confirmability is similar to improving the level of objectivity of the data (Lincoln & Guba, 1985). To improve confirmability, I used questions in interview guides or observation guides that had been reviewed by a panel of experts to ensure minimal subjectivity. I also improved confirmability by using multiple data sources.

Ethical Procedures

Researchers conducting studies with human participants must follow ethical procedures planning procedures that address the different ethical issues involved in researcher interactions with human participants. Ethical issues to be addressed included: (a) informed consent, (b) confidentiality, (c) data security, and (d) the voluntary nature of participation.

I ensured that all participants reviewed and signed informed consent forms before proceeding with study participation. Only those who had signed the consent form were scheduled for interviews and observations. The informed consent form provided details including: (a) research title, (b) study purpose, (c) participation requirements, (d) risks related to participation, (e) confidentiality issues, (f) notice of interview audio recording, and (g) options for terminating participation.

I kept the identity of participants confidential throughout the study, using pseudonyms in place of managers' and employees' names. I used the pseudonyms on informed consent forms, data sheets, and findings reports, making sure that I would be the only individual who knew the identity matching up with each pseudonym. I used pseudonyms in findings reports whenever I needed to identify a specific participant.

All data has been kept safely and securely. Any hard or tangible copies of documents, notes, guides and forms were inside a locked cabinet accessible only to me. All electronic data, including spreadsheets, Microsoft Word documents and NVivo files, were encrypted and password protected. I kept password information from all other

individuals. The password-protected files are stored on a personal laptop accessible only to me. After completing the dissertation, I will retain all study data for a period of five years, after which I will destroy all data by burning, shredding, or permanently deleting it.

Study participation was purely voluntary, with no participants forced or coerced to participate in any way. I did not penalize those who declined the study invitation and I provided no rewards or incentives for those who opted to participate. Participants could end their participation at any time without consequence, even after signing the informed consent. Any participants opting to end their participation in the study was provided with any data already obtained from them and the data was not included in study findings.

Summary

In this chapter, I explained my choice of qualitative phenomenology for this study's research design, articulating its suitability for addressing the research questions of this study. The target population for the study consisted of IS managers and employees in small- to medium-sized enterprises, with a sample of three to five IS managers and three employees recruited through purposive sampling. The inclusion criteria limited participation to: (a) information system managers or employees of small- to medium-sized enterprises in the United States, and (b) individuals who had been working for small- to medium-sized enterprises for at least 3 years. Managers must have been in managerial position for at least 2 years. The exclusion criteria closed participation to: (a) managers or employees who would be retiring within the next 6 months, and (b)

managers or employees who had self-declared disabilities or who were members of at-risk populations such as pregnant women, people with mental illness, people with terminal illness, and the like. Data were collected using interviews and observations and were analyzed using thematic analysis.

Chapter 4: Results

The purpose of this qualitative phenomenological study was to explore system managers' and employees' lived experiences about leadership and how those experiences influenced the organization's adaptive responses regarding technology and performance in the knowledge-based economy. Using the lived experiences of 10 participants consisting of information system managers and employees in a small- to medium-sized enterprise in the United States, this study generated increased understanding of how the complexity theory of leadership unfolds through information system management. I gathered data regarding the ways that these leadership processes affect adaptive problem-solving and how organizational performance can develop solutions for helping IS managers to lead and manage more effectively. To explore this complex phenomenon, I sought to answer the overarching research question and three secondary sub questions listed below.

> RQ1: What are managers' and employees' lived experiences about leadership that influence their organization's adaptive responses regarding technology and performance in the knowledge-based economy?

> > SQ1: What are the employees' lived experiences that show the effect of their managers' leadership skills in the information system departments on the organization?

SQ2: What are the managers' lived experiences that show the effect of personal leadership skills on their organization's information system departments?

SQ3: What are the managers' and employees' lived experiences that show the effect of leadership practices on their organization's adaptive responses and organizational performance?

In this chapter, I present the participants' demographic information, defend the trustworthiness of the data used in this study, present study results, and evaluate study findings. Given the methodological nature of thematic data analysis as proposed by Braun et al. (2014), I presented the detailed lived experiences of each participant and used these experiences in the development of the relevant themes of the study. The processes captured the "rich description of the phenomena" in its natural setting (see Kensit, 2000, p. 5). The chapter concludes with a summary highlighting the findings of the study.

Setting

I focused this qualitative phenomenological study on leadership and how system managers and employees influence their organization's adaptive responses regarding technology and performance in the knowledge-based economy. I explored the experiences of managers and employees of a small- to medium-sized enterprise operating in the United States. Because this business primarily engaged in the service sector providing home maintenance needs, IS technology was critical to successful business

operations. In this study, I critically analyzed how these leaders maximized

organizational resources to influence the adaptive responses of business owners in the use

of technology to meet the demands of the knowledge-based economy.

Demographics

The broad target population of this study was IS managers and employees of

small- to medium-sized enterprises. I recruited the smaller study sample of participants

by applying inclusion criteria that limited participation to (a) IS managers or employees

of small- to medium-sized enterprises in the United States, (b) individuals who had been

working for small- to medium-sized enterprises for at least 3 years, and (c) managers who

had been in managerial positions for at least 2 years. I applied exclusion criteria that

denied participation to (a) individuals who would be retiring within the next 6 months,

and (b) individuals who had self-declared disabilities or were members of at-risk

populations. These criteria guided me in the selection of 10 participants for this study.

The 10 participants included five managers and five employees who worked in a

medium-sized enterprise operating within the service sector. For purposes of the data

presentation, I assigned pseudonym for each participant to conceal their identities in the

study process. Table 1 summarizes the demographic characteristics of the participants.

Table 1.

Demographic of the Study Participants

Pseudonym	Sex	Designation
J	Female	Employee
K	Female	Manager
G	Female	Manager
H	Female	Employee
F	Female	Manager
S	Male	Employee
C	Female	Employee
D	Female	Employee
A	Female	Manager
P	Female	Manager

Data Collection

I met with the heads of the companies to discuss the purpose and significance of the study to the business industry. The result of each meeting resulted in permission to conduct the study and access the pool of study participants. I began the recruitment process in each workplace where I conducted observation and gathered contact information of the potential participants. Upon gaining access to this information, I sent the invitation with the informed consent to 15 potential participants.

I asked interested participants to affix their signatures to the last part of the informed consent forms and return the signed copy to me during a second visit that took place a week later. I screened the study participants using the eligibility criteria and confirmed their availability for interviews and observations.

During the semistructured interviews with the study participants, I informed the participants regarding the study process and explained the mechanics for ensuring confidentiality and anonymity of the data. After providing that introductory material, I asked six main questions and varying numbers of follow-up questions, not exceeding a maximum of four follow-up questions per main question. The questions gathered information including (a) roles and responsibilities of leaders in the IS departments, (b) accomplished roles and responsibilities of leaders, (c) tasks of IS managers, (d) accomplished tasks within the departments, (e) impact of leadership in need-based IS operations, and (f) impact of leadership in overall performance. With consent of the participants, I audio recorded all interview sessions and submitted interview transcripts for participants' review.

Interview data were further supported from the results of the 2-hour field observation sessions with participants. I documented all organizational aspects that I observed during this process, including the policies and procedures supporting the IS department and the labor workforce maintained by the departments to run the systems. Recorded observations were uploaded into NVivo, which I used to provide explanations for the nodes emerging from the responses of the participants.

Data Analysis

I used the thematic analysis procedure of Braun and Clarke (2014), following the six steps they outlined: (a) data familiarization, (b) code development and coding, (c) theme development, (d) theme revisions, (e) theme finalization and theme definition

development, and (f) report generation. I implemented the first four steps separately for each transcript and consolidated the codes to develop the themes of the study. In this section, I present the full description of how each participant lived the experiences, followed by the consolidated emerging codes.

Participants' Individual Descriptions

Participant J. Participant J was a female employee from a small company. She identified "systems knowledge" as the ideal role and responsibility of leaders in IS departments. Participant J pointed to leaders as the individuals responsible for troubleshooting difficult IT situations. Participant J said, "We need help to see something is not happening; the supervisor or the leader can follow up with that department to bring the proper tools to make sure that our system is working well." She cited the nonfunctionality of software and purchases of updated and improved software as examples of systems knowledge being the primary responsibility of the leader.

Participant J said she believed that ensuring information system awareness and functionality of the system are the primary tasks of IS managers. She cited the experience of having the manager in her office troubleshoot computer issues and get everyone "back on track." Participant J said that IS leaders should have the ability to influence the organizational stakeholders in the use of the system and in upgrading this system appropriately for the needs of the organization. She described a forward-looking IS leader as one who has the ability to provide better simulation software that allows clients to "see an end result of their project . . . a better realization of the end product of their project . . .

And I believe that it will help the company as a whole." Overall, Participant J concluded that the IS leadership provided an improvement in the organizational computer system, making useable software downloadable for employees.

Participant K. Participant K was a female IS manager in a medium-sized company. She mentioned that visioning and directing her staff to that vision are her primary responsibilities in the IS department. In carrying out those roles, she had annual IS plans that were aligned with the vision. These plans are followed through by her staff, with accomplishments evaluated annually. Participant K shared that her goal was "to ensure that my staff understands their role in the organization as well as the department and how we can all work together to get our jobs done."

Participant K articulated that her tasks involved managing projects, ensuring the project completion, managing work assignments, and evaluating the quality of work. Participant K focused on managing IS personnel, particularly staff work assignments. She ensured that workloads are assigned to people who are "best fit to do the work." When asked about her impact in the organization, she considered her creation of an efficient information system to be her contribution to the growth of the business. However, she mentioned that she carried out this achievement with the "upper leadership." She noted the potential value of social media in marketing the organization and its services. As social media is an ongoing IS project, she said that its marketing outcome determines her leadership impact on organizational performance. She explained:

One of the things that we're doing is trying to figure what is the best way to get

our messages across to people. . . . It's seen in the number of hits that we get, the

number of re-Tweets, the number of impressions that we get, and the social media

are in that world, and so I think that the leadership team, the upper leadership

team has been impressed with me, with the way that I've been able to turn the

department around, or the whole organization around and making sure that we are

known outside of just our circles.

Participant G. Participant G was a female information technology (IT) manager

for a home maintenance company. She described her responsibilities this way: "I am

responsible for the overall IT department, the infrastructure, records management,

security, all aspects of the IT security. All aspects of the IT network." Participant G

linked the size of the company to working all tasks required to make the department

function in the organization. She said, "I've actually performed all the roles. [This] is a

small organization. We do a lot of work and require robust systems. I'm required to know

something about all aspects of the job." Unlike other participants, she was hands-on in

systems checking and in the procurement of devices necessary for setting up a functional

IS department. She said, "I would use network laws to ensure that we're not being hacked

by anyone. I procure those devices needed to operate our infrastructure. I'm involved in

all aspects of the system, because we're a small organization."

When asked about her tasks in the organization, she mentioned the creation of an

IS system and ensuring that the system is functional for business operation and use of

employees. She described her tasks by saying: "I'm responsible for ensuring that operations are in place and systems are in place for the business to move forward. I guess I just ensure operational readiness so the rest of the employees can do their job."

Participant G stressed that for her to be able to provide a valuable impact to the organization, knowledge about the organization is crucial in the delivery of IS systems for business operation. She clarified: "If I don't understand what our mission is, then we cannot operate to our fullest potential. I would say that my impact would be major if I'm lacking in an understanding of where we're trying to go." Her understanding about the business made her think that more than focusing on the setting and maintaining an IS infrastructure, it is crucial for the business to improve the overall operations by reducing staff and offering improved services. She described the information system as "costly," particularly for a small company. She said: "I believe it's costly to do business the way we've always done it, trying to maintain our infrastructure." She described her leadership perspective as re-directing business focus to strategies that "adapt resources and priorities to address the changes in the market."

Participant H. Participant H was a female employee from a small home maintenance company. She described her IS supervisor as a nurturing leader who ensures the development of employees' potential. She described the supervisor as someone who engages in open communication with employees and is mission-oriented toward imparts learning to young people. She further described the tasks of the IS manager, saying that he: "empower[s] the employees with the support and tools necessary for their success for

the job." She further claimed that the IS manager is responsible for ensuring that "processes and systems are in place … and that they're clearly articulated to staff."

When asked about the ability of the IS leader to adapt in a need-based economy, Participant H said that the manager opens learning opportunities for all employees in order that they can "adapt and to be respectable to the needs of our clients." She further described her leader as "visionary," saying "she's the lead . . . her decisions impact the direction of the company."

Participant F. Participant F was a female manager in a home maintenance company who is taking on the IS leadership role. She described her role by saying:

I am responsible for developing and maintaining the infrastructure or the information systems infrastructure and technology for the company. I'm also responsible for hiring and managing any contractors that we employ to assist us with developing our infrastructure and maintaining our information technology.

She narrated her experience of how she started building the IS infrastructure, explaining it this way:

Starting here at the company, there was more of a peer-to-peer infrastructure. There was no network and there was no domain infrastructure. The owner of the company was in need of creating more of a domain so that she could work remotely. There's a lot of off-site work that is needed, which cannot be done physically in one location. For that, I had to develop and create a plan that will allow her to work remotely, allow for any contractor access to the domain, and

access to work ... To be able to work while they're on sites or working with

customers.

She claimed that she successfully achieved these goals and is currently "in charge

of future planning." She described her tasks as business-driven because the most crucial

infrastructures are already working. She said:

The business determines my task. So, as of right now we have our domain up. We

have our network up, and that big portion is complete. So, right now we're

maintaining different hardware. We're maintaining . . . We're planning for future

expansion.

Participant F shared that she is mostly responsible for doing routine tasks: from

"creating it, developing it, structure, to the point of implementing the plan, to finding the

talent and the contractors that we would need for the time being to actually work on it,

and then to manage the contractors." As a leader of the department, she worked with

contractors to ensure the correct implementation plan. She mentioned that her leadership

role is crucial in the ability of organizations to adapt and respond to need-based

information systems. She said that without her leadership, "it would be very difficult for

the contractors who are new to the environment able to come in and actually complete

what we need done."

Participant F shared that understanding and ownership of tasks were effective in

motivating employees' work-related behaviors. She said: "employees work better when

they have ownership, and when they have complete understanding [sic], and by

ownership by giving them a task that they have to see through from inception to completion." She believed that employees can share and contribute more of what they know and skilled if they have the complete understanding of the overall project goals. She said:

> If you allow an employee or someone working with you the abilities to work on a portion of the plan, but at the same time understands the complete goal and the complete picture, that employee is able to show you more of what they know and more of their knowledge rather than just giving them directives and complete tasks to do.

Participant F considered hiring more employees than contractors to sustain the training the company imparted for new workers. She explained:

> When contractors come, they come and do one particular project or one particular task, and then the contracts are over. That makes it so that the very next task that may need to be done we have to basically retrain and re-inform a new set of people.

Participant F believed that leadership is crucial to the overall performance of the company. She said that setting organizational targets and timing direct the employees and contractors to the needed work. She stressed that communication skill and ability to motivate employees are important leadership traits in achieving business success. She shared: "I believe that leadership is the ability to effectively explain what needs to be

done, and then to support the group of people who are working with you in four years to get the goal accomplished."

Participant S. Participant S was a male employee in a small company operating across the country. He believed that leaders in the IS department are responsible for the procurement of hardware and ensuring that the IT workforce supports the information needs of the customers and the organization. Participant S cited the 24-hour help desk operated by the IT department as a functional IT role and responsibility for which IS leadership has taken the lead. He explained that the help desk is responsible for assisting client concerns particularly closing their encounters and receipts. He claimed that this IT program gave "greater workflow and follow up time with the customers." He further stated: "since this implementation, we have increased productivity by 45%."

Participant S linked the accomplishment to the IT leadership who he said: "put in the work and they do all the quality of work and making sure that we're all working together." He said that the IS manager "oversees information systems from word processing, telephone, cell phone, pagers, any kind of electronic receipt keeping records, and even the emergency communications." He claimed that while the IT staff had individual assignments, the manager oversaw the implementation and ensured that the system was secure and free of bugs. He reported that the manager implemented regular weekly meetings where "our manager discusses the ways to ensure that we don't fall prey to any of those attacks."

When asked about the impact the IS leader had in adapting to the need-based economy, Participant S cited the leadership behavior of the manager as important in the overall productivity of the organization. He cited the ability of the leader to motivate the staff in embracing changes and effective communication skills as important contributions to the success of the information system. He shared: "A good leader can motivate the staff to accept changes and continue to strive and improve communication with their staff. They can also use the latest information system to help their staff work better together as a team and for the customers." He concluded: "Leadership here works well with the workers. They tend to listen to the people in the front lines. They also have the ear on ways to improve our overall work experience."

Participant S recommended home-based work as one option that management could improve, saying that this option could address the persisting network issue. He explained: "I think, improve the network from home would be the best way to do that." In addition, he recommended improving the employees' morale. He explained: "A happy employee works better as they work with the team. And, if they feel like they're happy, they will try to work more and just go for the extra mile."

Participant C. Participant C was a female employee working in a home maintenance company. She articulated the oversight role of IS managers, particularly in "providing guidance" for the IS infrastructure. She mentioned that training rarely happened in their department. She said: "We go through, like once in a blue moon, application boot camp, for like a week. But that's just for the actual, I guess, a tool that

you use." She considered the IS manager to be a good communicator when recalling the overseeing function of the manager. However, she narrated that most of their managers are "not very versed in the different tools and technology that they use by the department that they manage." She claimed that her manager is only providing limited guidance over her work. She explained: "She really doesn't have knowledge of. So, she can't really give me full guidance. Only try to put me in direction." Although her manager is not technically knowledgeable regarding her job, she described that the strength of her manager as being empowering. She said: "She empowers. She definitely tries to guide us, but in a time, eventually … The ability is not there because the knowledge is not there. But the guiding me through, trying to push you forward."

Participant C was among the participants with managers who valued process documentation and its use in overseeing daily functions of employees. She said: "I believe to oversee and guide us to the best of her ability with the documentation and instructions on rules and tasks that they put in place." Participant C considered the leadership behavior of her manager to be a significant contribution to the organization. She explained that leadership provides structure-guiding employees' accessibility to IS infrastructure. Participant C shared that leaders' roles in leading the department and motivating employees are essential to the overall performance of the organization. However, she recommended improving the professional development program within the organization. She explained that this program is necessary for addressing the "constant changing of information systems."

Participant D. Participant D was female and had been employed for six years at a small company. She mentioned that the ideal role of an IS manager is "to ensure that all communication is distributed to all employees via emails, the latest top technology." She cited that the company implements an "electronic non-attendance system" called Square Scheduling, where employees are provided with an iPad for employees' collaboration, particularly for "non-attendance and temporary leave."

Participant D described herself as an "assistant to MITC system, using the software for scheduling." She identified the roles and responsibilities of her manager as ensuring the whereabouts and accomplishment of the employees using technology. However, as she also was an experienced operator of the system, she processed the task "with the overseeing of my manager."

Participant D considered manager as being important for the operation of the company. She said that one crucial role of an IS manager is to ensure the successful transfer of knowledge from employees who participated in the training and development program of the company. She described this as a process, saying: "IT will then reach out and get other training from other technology resources and then bring the knowledge back to then train us."

Although Participant D claimed that the communication system is in place, she noted the importance of communication between the employees and management. She said: "If management will communicate a little more, then everybody would be on the same page at all times." She further stated that becoming a better organization would

require "getting the top product" that could provide better service for the company. She cited an example where the company invested in the cheapest software but found it to be less efficient and less effective.

Participant A. Participant A was a female IS manager of a small house maintenance contractor. Participant A was responsible for training employees in the company's information system, processes of use, and ensuring complete documentation. For five years, Participant A was doing routinely IS work such as "uploading information, storing documentation and archiving for future reference." Participant A indicated that her work interest focused on the company documentation. She shared: "We archive the old documentation so the new documentation is fresh and available to anybody that needs it."

When asked about the specific tasks she handled as a systems manager, she enumerated her roles in systems awareness and building a communication system for efficient operation of the system. Participant A said: "The websites and can communicate effectively through these sites and maintain and support the efficient operations of these sites. Sending out communications via email when needed to address any issues with the sites and troubleshooting with any problems." Participant A works with her staff and other technical people to "resolve some of the problems" that the company has. She considered her role in process documentation effective in improving the efficiency of IS troubleshooting. She claimed: "very effective, because again you're not recreating the wheel, you have documentation to verify and prove the information is there for all to

use." She mentioned that this system is "self-sufficient" and that employees have access. She claimed that the benefits of this initiative may be further supported with the provision of "lunch and learn sessions on a monthly basis or Friday Bagels Day." She described this activity as: "where employees can do a brain dunk and kind of come together and just talk about lessons that they would ... talk about different things that they would like to see within the workplace and discuss it, write about it, and then proceed to have it done."

When asked about her leadership impact in the organization, she described herself as an engaging leader who wanted to ensure employees' engagement in knowledge management. She continued:

> I do one-on-one with the employees to figure out what they've learned and if I feel like they haven't learned anything then it's up to me to try to figure out what I can do better to teach them, to make sure that they are getting the knowledge that they need.

She explained that "employees influence others," which can impact organizational success. She said that knowledge transfer is not achievable when the leader is unable to influence organizational learning. She considered creating "best practices or standard operating procedures from experiences of what has worked successfully in the past."

Participant P. Participant P was a female manager who worked in a small company for eight years. She claimed that her primary role was to build an IS system that supported the mission. Participant P said: "My role is to understand the environment or to understand the mission of the agency. And then to relay that mission to my team, which

is IS and to have my team build a system that supports the mission." She cited her role in setting up the enterprise system as focused on "hardware, software and social media." She considered her role as being one that allowed the "company to grow."

When asked about whether her roles and responsibilities as an IS manager were accomplished, Participant P remarked that the team had "made some accomplishments … and had some failures." She stressed that learning is achieved "by way of failures." She said: "It's in the arena that we're weaker or that we fail in, that we have greater opportunity to grow. "Participant P cited the use of "used multiple software packages," saying "many of them just did not fit the need … Out of the failures, the company sorted out an online program with positive reviews in the area of finance. As a result, the company implemented the use of QuickBooks." Participant P claimed: "We've got QuickBooks, we've got our best answer in our financial packages." In terms of information management, Participant P said the company relied on 365 Online. In conclusion, Participant P shared that achieving the desired organizational outcome defined her leadership in the department. She said: "I can see what everyone's doing."

Participant P considered knowledge in resources – and particularly labor resources – to be the task of an IS manager. She elaborated, saying that she was required: "to understand the people that I have and what their abilities are and what their strengths are and then, of course, what their weaknesses are." For Participant P, knowing the IT skill set and knowledge is a prerequisite for providing the organization and its employees the access to IS. She said, "higher-level so that different managers from a bottom level all

the way up to the highest level of management could have access." She added that part of

her task is to ensure that IS drives work efficiency across all level of employees. As an IS

manager, her actual experience in building an IS enterprise was the planning and drafting

the policies and procedures for the implementation of the system at various levels.

Participant P claimed that measuring her impact on the organization would mean

determining the growth she had offered to the business operation. She shared that the

company started "very local contract dealing local work and we have gone from local

contracting to federal contracting as well." She added that with the success of IS under

her leadership, the initiative brought more capability-building opportunities for

employees as well as improving recruitment policies by hiring "younger people" who can

bring fresh ideas. With IS, the management was able to adopt new ideas that leaders

before "never gave real consideration."

Emerging Codes

In order to familiarize myself with the data, I reread the interview transcripts and

wrote the individual lived experiences of participants according to their responses to the

interview questions. Writing the individual stories helped me to understand the

perceptions of the participants according to how they lived the experiences of leadership

in their respective organization. After completing the familiarization process, I began

processing the data with the aim of reducing and thermalizing the relevant experiences of

the participants.

Using NVivo qualitative software, I applied an open coding process and identified the relevant nodes line-by-line for each transcription. I repetitively asked: (a) the ideal roles and responsibilities of IS managers, (b) the tasks of IS managers, (c) the impact of leaders, and (c) performance improvements. I categorized these nodes as parent nodes. I proceeded to identify 40 child nodes were identified. This subsection will discuss the nodes and the description of each.

Ideal roles and responsibilities. This parent node is an *in vivo* code or a type of code that used verbatim the terms or phrases from the transcripts responding to my request that participants enumerate the roles and responsibilities of IS managers. I identified nine codes describing the roles and responsibilities the IS managers they participants perceived and experienced while working in the company. For purposes of discussion, only codes with at least two responses are presented here.

Communicating the system. This child node refers to the delivery of information concerning the IS project, implementations, tasks of each IS staff, policies and procedure for IS accessibility. This code emerged from participants who valued understanding the system by communicating it with the employees. For instance, Participant K, a manager, explained that communicating the system "ensures that my staff understands their role in both the organization as well as the department and how we can all work together to get our jobs done." Participant H, an employee, asserted that it is essential for leaders to hand over clear instructions to staff. She mentioned that her manager was "always was open for Q&A. We had regular check-ins on progress."

Participant F, a manager, used the phrase "demonstrate the plan" to describe the purpose of communicating the system to employees. For her, this approach was an effective approach for ensuring IS functionality. Participant S, a male employee, identified weekly meetings as a venue used by his manager for discussing solutions to counter cyberattacks. He said: "We have weekly meetings to discuss the items that can make our systems subject to cyberattacks, and our manager discusses the ways to ensure that we don't fall prey to any of those attacks."

Participant D, a female employee, mentioned receiving instructions and other relevant information from the IS manager in the email and the latest top technology the company is using. Participant A, a manager, said she sent information materials to her staff, providing learning materials that "address any issues with the sites and troubleshooting with any problems." She added that one form of communicating the system is to do process documentation to "archive for future reference."

Systems planning and building. This code emerged from participants who were most knowledgeable about IS technicalities and worked with a small number of staff or contractors. I identified this node as part of the roles and responsibilities of IS managers after participants cited the importance of leading by building a system that ensures the achievement of organizational mission. I merged the codes for building and planning after finding its relationship with the responses of the participants. For instance, Participant P, a manager, related the need for her to understand the mission of the company in order to plan out the building of a system appropriate for the needs of the

company. Participant P shared: "then to relay that mission to my team, which is IS and to have my team build a system that supports the mission."

Participant F, a manager, likewise cited her responsibility in "developing and maintaining the infrastructure or the information systems infrastructure and technology" for the company. She said that planning the information system is among her top priorities. Participant S and Participant C, both employees, claimed that part of building the system is to write policy guidelines in the procurement of equipment. He added that leadership plan out the work and ensured the quality work of the staff … together and They put in the work and they do all the quality of work and making sure that we're all working together.

System knowledge. This code emerged from participants who viewed the importance of leaders having technical knowledge for troubleshooting higher IT concerns. Participant J, an employee, expects that an ideal leader should "know the system that we're using, the software, the computer systems that we are using." Participant G, a manager, supported this expectation that claimed: "I'm required to know something about all aspects of the job." She said she is performing "all the roles" as her organization is small and they had "to do a lot of work and require robust systems."

Participant F enumerated "infrastructure, networking, and the physical hardware that the company uses" as areas that she needs to have competency in. Participant 9, a manager, added that technical knowledge is required for a manager as stakeholders within the organization expect them to troubleshoot any technical problems.

Leading IT processes. This code emerged after finding the "overseeing" and "directing" roles of every IS endeavor. Participant G, a manager, for instance, mentioned: "I am responsible for the overall IT department, the infrastructure, records management, security, all aspects of the IT security. All aspects of the IT network." This is supported by employee Participant C's statement that: "I think their role is to oversee and provide guidance." In addition, Participant S, an employee, said that staff management is the responsibility of the manager. He shared: "He and she also need to make sure that the department is staffed around the clock, and that the staff is helpful to the customers that they come in contact with." With the involvement of the IS manager in the customer service help desk, the organization had increased "productivity by 45%." He explained: "I saw my IT department implement the 24-hour help desk to help customers throughout the day. Also, dealing with the people we deal with, helping people with problems closing their encounters and receipts, leading to greater workflow and follow up time with the customers. "

Mentoring leader. This code emerged from participants who valued the behaviors of a transformational leader particularly in the aspect of motivation and knowledge transfer. Participant H, an employee, shared that an ideal IS leader should "nurture and mentor each young person so they will reach their fullest potential in the organization and in regards to their work ethic." Participant 7 shared her experiences with the IS manager who provided technical guidance to the department staff. She said: "overviews of how things, should be done."

Table 2.

Emerging Code: Ideal Roles and Responsibilities

Code	# of occurrences	% of occurrences
Ideal roles and responsibilities		
communicating the system	6	60%
system planning and building	6	60%
systems knowledge	4	40%
leading IT processes	3	30%
mentoring leader	2	20%
visioning and directing	2	20%
documentation of operation	1	10%
Procurement	1	10%

Tasks of manager. I used the *in vivo code* to group the responses of the

participants concerning the employees and managers tasks in the IS department,

identifying 10 tasks that were mentioned by both managers and employees. For purposes

of this discussion, I only presented the tasks that were included in the responses of at

least three participants.

Drive efficiency. This code emerged from participants who recognized the role of

technology in driving business growth by ensuring efficient organizational processes. All

five managers were sensitive in their tasks concerning the use of technology to drive

efficient processes. For instance, Participant P, referenced her sensitivity in timelines

shared that as manager, she had to find solutions in managing project that are effective.

She justified: "those kinds of tasks were given to the information system manager,

myself, to implement or, to at least find the answer, so that we can look at how we implement and move forward."

Participant K related her task of doing an evaluation as a prerequisite in finding ways to make the work processes efficient and effective. She narrated: "figure[ing] out if there is a way to do it better? Is there a way to do it more efficiently, more effectively? Is there a way to do it where we're going to be more innovative? She said that implementing projects require concerted effort "with upper leadership." She justified: "I need to know that the solutions that I come up with are something that they actually are going to want to implement company-wide, or else we just wasted our time." She concluded that her task requires "ensure[ing] operational readiness so the rest of the employees can do their job.

Participant F, a manager, also cited her task in communicating the organizational goals and the execution of the plans to employees. Her role is to ensure the effective implementation of the plan to make the processes functional. Participant A also a manager affirmed that achieving efficiency of IS processes and business operation requires effective communication with employees. She said: "communicate[ing] effectively through these sites and maintain and support the efficient operations of these sites."

Access to IS. This code emerged from the participants who viewed accessibility of IS being the primary tasks of the manager. Participant P cited that it is her task to ensure that the system is accessible across all level within the organization. She justified:

"different managers from a bottom level all the way up to the highest level of management could have access. "Participant G likewise cited: "I ensure that everything that the users need is available. I ensure availability."

Participant H, an employee, linked accessibility of IS to employees' empowerment. From her perspective, employees should be supported with the necessary tools required to be successful in their job. She said: "To empower the employees with the support and tools necessary for their success for the job … you need to make sure that processes and systems are in place."

Collaborate. This code emerged from participants who work with a team within the organization and with contractors in building and maintaining the IS. Participant F, a manager, shared her experience with the staff, saying:

I've personally worked on from creating it, developing it, structure, to the point of implementing the plan, to finding the talent and the contractors that we would need for the time being to actually work on it, and then to manage the contractors. To actually explain to them the goal and explain to them the plan and work with them in order to effectively implement the plan.

Both Participant C and Participant A cited that employees and leaders collaborated for purposes of troubleshooting technical issues of the system and at the same time determining the progress of the employees' tasks. Participant C shared that leaders are tasked "to track all employees time, so that at the end of the week they get

generated progress." Participant A identified doing conference calls to technical people to "resolve some of the problems that we have."

Table 3.

Emerging Code: Tasks of Manager

Code	# of occurrences	% of occurrences
Tasks of manager		
drive efficiency	6	60%
functionality of the system	5	50%
access to IS	4	40%
Collaborate	3	30%
overseeing function	3	30%
project management	3	30%
system awareness	3	30%
knowledge in labor resource	2	20%
process documentation	2	20%
write policies and procedures	2	20%

Impact of leader. This parent node is an *in vivo* code taken from the transcripts responses to my question regarding the impact of leaders and or experience levels in the ability of participants' organizations to adapt to response in need-based of the use of information systems. I identified eight codes describing the influence of leaders on business success. For purposes of discussion, only codes with at least three responses are presented here.

Motivate work-related behaviors. This code emerged from participants who see the importance of leadership values such as employees' motivation and knowledge transfer. Participant F, a manager, observed that "employees work better when they have

ownership, and when they have the complete understanding, and by ownership by giving them a task that they have to see through from inception to completion." She believed that with leadership motivation, the employees using technology drive business success. She explained:

> If you allow an employee or someone working with you the abilities to work on a portion of the plan, but at the same time understands the complete goal and the complete picture, that employee is able to show you more of what they know and more of their knowledge rather than just giving them directives and complete tasks to do.

Two employees supported the positive contribution of leaders in employees' work performance. Participant S, a male employee, described a good leader:

> A good leader can motivate the staff to accept changes and continue to strive and improve communication with their staff. They can also use the latest information system to help their staff work better together as a team and for the customers.

> Participant S used the term "empower" to describe the leader who "tries to guide us." She said that her manager pushes them forward so they can perform the job effectively.

Table 4.

Emerging Code: Impact of Leader

Code	# of occurrences	% of occurrences
Impact of leader		
motivate work-related behaviors	3	30%
business growth	2	20%
knowledge transfer	2	20%
upgrading of system	2	20%
visionary	2	20%
efficient IS processes	1	10%
marketing value of organization	1	10%
understanding business priorities	1	10%

Performance improvement. This parent node is an *in vivo* code taken from the responses to my questions regarding perceived areas of organizational improvement. I identified eight codes describing the possible areas where the organizations could improve in terms of adapting and responding to needs through the use of information systems. For purposes of discussion, only codes with at least three responses are presented here.

Capacity-building. This code emerged from the responses of participants that relate to improvement in the areas of training, professional development program, coaching, and knowledge transfer. Participant P mentioned that it is the policy of the organization to encourage employees to look for training opportunities. She said: "we actually mandate that our employees go out seeking the opportunities in the marketplace for which they can grow." She shared that the management brought a new training and development program for employees.

Participant H, an employee, also believed that "consistent, ongoing opportunities for training" help employees adapt to the changing market needs. She added: "There's also consistent feedback with our weekly check-ins. With both of those opportunities, we are able to adapt and to be respectable to the needs of our clients." Participant C affirmed that professional development is essential for acquiring "a better knowledge and understanding of the department that they marked for their leaders." She also believed that regular professional development is necessary for meeting the "constant changing of information systems."

Knowledge management. This code emerged from participants who valued in in-house project management and documenting processes for future use of various stakeholders. Participant F, a manager, preferred "to hire more staff rather than contractors." She justified that scarcity of knowledge within the organization could not be addressed sustainably with contractors who do the work and leave. She said that with repetitive issues, the department has to retrain and re-inform a new set of people."

Participant A used the phrase "recreate the wheel" to refer to the inefficient practice of re-doing the processes accurately. She emphasized the importance of documenting the processes for future reference. She shared: "We have spreadsheets to verify the information that is accurate and correct." She mentioned that "documentation of best practices or standard operating procedures from experiences of what has worked successfully in the past" is essential in managing organizational knowledge. Participant C, an employee, corroborated the importance of managing reference procedures for

employees' knowledge acquisition in terms of troubleshooting issues. She said that it is

easier to fix issues as they go along rather than re-training someone to do the work.

Table 5.

Emerging Code: Performance Improvement

Code	# of occurrences	% of occurrences
Performance Improvement		
capacity-building	3	30%
knowledge management	3	30%
embraced changes in IS	2	20%
upgraded computer system	2	20%
getting efficient product	1	10%
internal communication	1	10%
re-direct business priorities	1	10%
social media	1	10%

Evidence of Trustworthiness

I established the four criteria for trustworthiness using different procedures. The

credibility of this study was established through the use of member checking of collected

data. Prior to data analysis, I collected feedback from participants concerning the

accuracy of the transcriptions and whether there was information they wanted to clarify.

After a specified deadline for submission of discrepancies, I considered the data accurate

and free of errors.

Transferability was assured with the thick descriptions of the lived experiences of

participants. Prior to data coding, I ensured that I understand the individual context so

that I could label each of the emerging codes accurately and relate the experiences to

other participants as well. The individual stories along with the procedures I used in the analysis will assist future researchers who may conduct similar or related studies. The context of the lived experiences provided directions concerning the applicability of the findings to other population or settings.

Throughout this chapter, I described the method of data collection and analysis and explained the emergence of data codes from the analysis. The interview guide assured the confirmability of the study results. As a researcher with experience in IT management, my subjectivity regarding this phenomenon was high. To minimize personal bias, I used the guide interview questionnaire and observation datasets.

Results

From the coding processes, I defined and linked each code that I found relevant for understanding how leadership processes affect adaptive problem-solving and how organizational performance provides a deeper understanding for developing solutions that help IS managers to lead and manage their departments more effectively. I grouped my thoughts from the categories earlier identified in the analysis and sought answers to the research questions. From the emerging codes, I identified three themes that I will discuss in this section.

Theme 1: Leaders motivate employees' positive work-related behaviors. This theme emerged from the collection of employees' responses concerning the roles and responsibilities and the tasks they observed the managers in the information system department accomplished. A more direct description of the behaviors that leaders are able

to impart to employees was shared by Participants S and C. Participant S described how his leader impart the value of being adaptive to changes and to continuously strive to learn the latest technology to update the system and improve the working conditions of the employees and the business experience of the customer. Participant C captured this experience in his statement: "A good leader can motivate the staff to accept changes and continue to strive and improve communication with their staff. They can also use the latest information system to help their staff work better together as a team and for the customers."

Participant S used the term "empower" to describe how her manager copes with the latest technology that could affect the technical requirement of the team. Although she confided that the technical knowledge of her manager is not sufficient to guide her, she somehow pushes the employees to identify learning opportunities to update their technical capabilities. She described this experience in a statement: "she empowers. She definitely tries to guide us… I guess trying to show us how to do it? The ability is not there because the knowledge is not there. But the guiding me through, trying to push you forward." Participant H also related how her leader empowers the employees "to do our jobs at our fullest capacity" by providing them the necessary "support and tools necessary for their success for the job."

Theme 2: Effective communication skills ensure accessibility and efficiency of the organizational information system. This theme emerged from the collection of managers' responses across all questions that related to the influence of personal

leadership skills in the information system department of the organization. The theme

related the ways that managers' communication skills promoted access to and efficient

use of information system with the stakeholders. A more direct description of this

experience came from the interview responses from Participants K, F, and A.

Participant K mentioned that access, functionality, and overall efficiency of the

information system depends with how the staff process and "understands their role in the

organization as well as the department and how we can all work together to get our jobs

done." She related that ensuring the "clarity" of her directives concerning the use of and

evaluation of information system efficiency assures that employees are knowledgeable

about the existence and use of the system for efficient business operation. Participant K

described this in a statement: "To keep clarity, to have the big picture in mind at all

times, and to ensure that my staff understands their role in both the organization as well

as the department and how we can all work together to get our jobs done."

Participant F stressed that demonstration of information system plans should be

effectively communicated to employees particularly the users and those in-charge in

maintaining the system. Participant A described the aspects of the information system

that she communicated with the employees. Participant A enumerated: "how to use the

different websites, where to go to find the pertinent information needed, how to upload

the information, store documentation and archive for future reference." She mentioned

the avenues she used to communicate this information: "sending out communications via

email when needed to address any issues with the sites and troubleshooting with any problems."

Theme 3: Leadership practices influence business productivity. This theme emerged from the collection of managers and employees' responses across all questions that relate to the influence of leadership practices on the organization's adaptive responses and organizational performance. The theme relates how business productivity is influenced by the ability of the information leaders to adapt to the changing technological needs in the market. A more direct description of this experience came from the transcripts of Participants P and S.

Participant P described the growth of the business as her impact on the organization. With the information system she plans out, design, and maintain, the productivity of the organization increased. She said: "we were initially doing very local contract dealing with local work and we have gone from local contracting to federal contracting as well."

Participant S cited the contribution of the 24-hour help desk for the growth of the business, saying that that the system made the customers' experiences pleasant. She said: "I saw my IT department implement the 24-hour help desk to help customers throughout the day." She said that the system has led to "greater workflow and follow up time with the customers." She reported that with the implementation, "we have increased productivity by 45%."

Summary

In this qualitative phenomenological study, I explored IS managers' and employees' lived experiences about leadership and how those lived experiences influence the organization's adaptive responses regarding technology and performance in the knowledge-based economy. Using the experiences of five employees and five managers from small- to medium-sized enterprises in the United States, I provided new knowledge about the ways that the complexity theory of leadership unfolds through information system management. From these lived experiences, I uncovered three themes that addressed the research questions: (a) leaders motivate employees' positive work-related behaviors, (b) effective communication skills ensure accessibility and efficiency of the organizational information system, and (c) leadership practices influence business productivity. These themes are discussed further in the next chapter.

Chapter 5: Discussion, Conclusions, and Recommendations

Leadership is important in an increasingly knowledge-based business environment. Businesses in a knowledge-based economy must remain competitive and must adapt quickly to the rapidly changing business environment (Benbya & McKelvey, 2006; Clarke, 2013; Havermans et al., 2015). Leaders must be effective in maintaining competitiveness in a constantly changing business environment (D'Innocenzo et al., 2016; Hoch, 2013). In response to the shifting economy and its implications for leadership in organizations, researchers have proposed leadership models that focus on leadership as a process involving the interactions among many individuals in an organization (Curral et al., 2016; Geer-Frazier, 2014). The implementation of effective leadership strategies in MIS has significant positive implications for organizational performance.

This study focused on the general problem of leaders' failures to lead effectively in the current knowledge-based economy, resulting in deleterious effects on organizational performance and threats to organizational viability (D'Innocenzo et al., 2016; Hoch, 2013). The specific gap in knowledge that I addressed in this study was the lack of understanding regarding the ways that leadership processes interact with IS functions to influence organizational success. That lack of understanding means that managers are poorly equipped to lead MIS functions effectively in a knowledge-based economy (Petter et al., 2013). The purpose of this qualitative phenomenological study was to explore IS managers' and employees' lived experiences of leadership and how

those lived experiences influence their organization's adaptive responses regarding technology and performance in the knowledge-based economy.

I explored the lived experiences of 10 IS managers and employees from small- to medium-sized enterprises in the United States. These managers and employees had first-hand experiences related to the phenomenon being studied. I relied on two data collection techniques for this study, semistructured interviews and observations. I applied thematic analysis strategies to systematically determine the emergent themes that were relevant to the study (see Braun & Clarke, 2014; Merriam & Tisdell, 2015). I applied the six steps of Braun and Clarke's (2014) thematic analysis: (a) data familiarization, (b) code development and coding, (c) theme development, (d) theme revisions, (e) theme finalization and theme definition development, and (f) report generation.

From the lived experiences of the participants, I uncovered three themes that address the research questions. The themes are listed below.

1. Leaders motivate employees' positive work-related behaviors.

2. Effective communication skills ensure accessibility and efficiency of organizational information systems.

3. Leadership practices influence business productivity.

In this chapter, I discuss the themes by comparing them with the findings in the existing literature reviewed in Chapter 2 and by applying the theoretical framework of complexity theory of leadership. I also present the limitations and recommendations for

further research, as well as study implications for theory and research and recommendations for future practice.

Interpretation of the Findings

The employees perceived that their managers in the information system departments motivated their positive work-related behaviors in adapting to the management information systems in the company. This confirms findings from Gaitling and Kim (2015) that perceptions of support by supervisors were positively correlated with employees' organizational commitment and job satisfaction. Gaitling and Kim (2015) showed that when managers guided the employees to reach their full potential, employees were more satisfied and more motivated to work. Moreover, managers reinforced positive work-related behaviors of employees by being role models in the workplace. Gaitling and Kim (2015) reported that employees worked better when they had ownership of their work.

The managers in the departments imparted to their employees the value of being adaptive to changes and to continuously strive to learn latest technology to update the system and improve the working conditions of the employees and the business experience of the customer. This also confirms knowledge in the discipline, as scholars have mentioned that employees in today's workforce value continuous learning, which is a component of complexity theory (Mencl & Lester, 2014). In the current study, the participants have a positive perception that their immediate leader empowered them to always update their technical capabilities and to always learn what needed to be learned

in order to be updated. One of the participants shared that even if her manager's technical knowledge was not sufficient to guide her, her manager still pushed the employees to learn the technical skills needed. The managers also shared that a good leader can motivate the staff to accept changes and to continue to strive to improve. For instance, when managers recommend that their subordinates learn a new software or new process, the managers will also train themselves.

Using the complexity theory of leadership, the results showed that the leaders are embracing interactions among individuals in the organization. Employee perceptions of supervisory support, job satisfaction, and knowledge sharing influence the employee, the leader, and the organization (Carlopio & Gardener, 1995; Kang et al., 2015). Leaders need to incorporate the perceptions of their employees in their leadership process to create shared leadership. It can be said that the managers described in the study demonstrated complexity leadership behaviors as the managers motivated the positive work-related behaviors of the employees and guided and empowered them to pursue continuous learning to remain updated with the current trends in the field. In fact, one of the participants shared that her manager motivated them to be updated with technological skills even if the manager herself was not well versed with technical skills needed in using the management information system. The manager was able to increase the human and social capital, which is the focus of complexity leadership. The manager increased social capital through being humble to the employee that her technical skills were not sufficient to handle the situation and asked the help of the employee to solve the problem.

In addition, the manager increased human capital in the organization through motivating and empowering the employee to always update herself.

The managers perceived that they practice effective communication skills to ensure accessibility and efficiency of organizational information system. This confirms the knowledge in the literature about the need for leaders to communicate effectively to guide the employees and improve the performance of the organization. Zohar and Polachek (2014) examined the relations among perception, climate, and performance, and found that when given feedback after a safety and productivity-related task, perception of feedback and increased communication impacted performance. The manager should be able to give clear directives concerning the use of and evaluation of information system efficiency to ensure that employees are knowledgeable about the existence and use of the system for efficient business operation. Leaders should be able to communicate clearly what they want for the subordinates to deliver the expected performance and output. This situation would start when the leaders would be able to share a common vision to the subordinates. A common vision would lead to efficiency because every individual in the department has the same goal.

From the perceptions of the managers, they were able to recognize the importance of social capital, which confirms the knowledge in the literature. Zhang and Cheng (2015) concluded that social capital mediate the relation between knowledge sharing and knowledge leadership. The managers supported and guided the employees, which improved the relationship between the managers and the employees, thereby increasing

the social capital in the workplace. This would also suggest that shared visions and collaborative environments are critical for organizational efficiency. In order to have a shared vision, managers must be able to communicate clearly and effectively to be able to guide and motivate the employees to achieve the same goals that positively affect the organization (Ruseva et al., 2016).

Complexity leadership is a strong alternative to traditional leadership. Traditional leadership involves only an individual leader's vision (Imperial et al., 2016). This type of leadership style has been effective in production-based economy, but it is not as effective in the current knowledge-based economy. There is a need for leaders to be able to create a shared vision with their subordinates to be able to be more productive and to remain competitive in today's business environment. A shared vision would also increase the tendency to share knowledge and work as a team (Curral et al., 2016).

Both the managers and employees perceived that leadership practices influence business productivity. Business productivity is influenced by the ability of the information leaders to adapt in the changing technological needs in the market. This result confirms the knowledge in the discipline about how leadership influences not only employee productivity but also organization productivity. For instance, Carmeli et al. (2013) found that employees exhibited higher levels of creative problem-solving when their leaders were more supportive of knowledge sharing. Moreover, leaders who demonstrate knowledge sharing behaviors positively influenced by knowledge management and organizational learning have a positive influence on organizational

performance (Noruzy et al., 2013). These leadership behaviors and practices suggest a shared leadership between managers and subordinates because the leaders promote knowledge sharing and make the subordinates participate in decision-making that creates a sense of trust and leads to improved organizational performance (D'Innocenzo et al., 2016; Drescher et al., 2014; Nazir & Shah, 2014).

Complexity leadership focuses on the interrelatedness and systemicity of organizational leadership (Clarke, 2013; Hazy & Uhl-Bien, 2015; Cullen-Lester & Yammarino, 2016; Friedrich et al., 2016; Kunze et al., 2016; Lester et al., 2017; Schaubroeck et al., 2016). The managers in the study showed that they demonstrate complexity leadership behaviors because they cultivate a sense of trust in the workplace, which leads to improved group dynamics and motivates employees to update their knowledge and skills, which leads to improved performance over time.

The results showed that complexity leadership is critical for organizations to remain successful in a knowledge-based economy. The current knowledge-based economy produces a business environment that is constantly changing. There is a need for organizations to have adaptive mechanisms based on changing conditions (Baltaci & Balci, 2017). This type of organization management can be accomplished through following the principles of the complexity theory of leadership. The leaders must be able to demonstrate complexity leadership behaviors through ensuring shared leadership and promoting knowledge sharing behaviors. Shared leadership is important in a business environment that is always shifting. Organizations must be quick to adapt and

collaborative mindsets are needed to do this. In addition, when organizations use complex adaptive systems, organizations are able to more effectively solve problems (Greer-Frazier, 2014). Greer-Frazier (2014) concluded that complexity leadership helps organizations and its employees to easily adapt to complex situations and generate effective solutions. The dynamic and interconnected components of the organization should be considered as a whole (Greer-Frazier, 2014). As a result, every individual in the organization is contributing to solutions in any situation.

There is a need for organizations to be dynamic because the demands of the 21st century are complex and always changing. Complexity theory of leadership can make organizations welcome uncertainties because organizations are confident in their employees in sharing the problem to produce effective solutions. These behaviors will make organizations successful.

Limitations of the Study

Limitations are methodological aspects of a study that a researcher cannot control (Grant &Tomal, 2013). One of the limitations of this study was its generalizability. Since all participants came from small- to medium-sized enterprises, the findings may not be generalizable to larger organizations or to industries other than those involved in the study. In addition, the sample size was limited to 10 participants. While that sample size is sufficient for a qualitative phenomenological study, the experiences of the 10 participants may not be representative of the experiences of other managers from other small- to medium-sized enterprises.

Researcher bias also served as a limitation in this study, given the researcher's role as the primary research instrument. The researcher collected the data, directly communicated with participants, and interpreted the data. The researcher's experience in the field and prior knowledge about the phenomenon may have influenced the interview process and data interpretation. I addressed potential researcher bias by adequately preparing questionnaires and detailed data collection and data analysis procedures.

Another limitation was the lack of prior research on the leadership processes used by IS managers since the concept is a relatively new one in the discipline of IS management. Prior studies could lay a foundation for understanding the research problem. In the current study, the prior research found in Chapter 2 provided some context to the current study but the studies did not specifically address the research problem in the study. More studies are needed in order to provide a foundation for the research problem.

Another limitation included the use of self-reported data in the current study. Participants could have remembered events incorrectly or could have exaggerated events. Participants could remember only certain parts of their experiences or could be mistaken about details of their experiences. Participants also could embellish events in order to make them more significant or to relate them more closely to the research topic. To address these issues, participants were assured that their honesty would be appreciated and that their honest responses would aid the researcher in coming to accurate conclusions. The participants were also asked follow-up questions during the interview in

order to solicit specific examples of management behaviors that they reported.

Participants also were assured that the information they shared would remain confidential

and private.

Recommendations

The study provided information about the lived experiences of managers and

employees regarding the leadership practices that have proven to be effective in the

current knowledge-based economy. Findings yielded a deeper understanding of the types

of leadership that impact organizational performance promote the viability of

organizations. Future researchers should continue to pursue studies that address

leadership in the current knowledge-based economy in order to inform practitioners about

the current knowledge in the discipline.

Since all participants in this study came from small- to medium-sized enterprises,

future researchers could conduct studies either organizations of other sizes. There is room

for future inquiry into the leadership strategies that are effective for sustaining small- to

medium-sized enterprises. There is room as well for studies regarding larger

organizations in order to determine whether similar strategies are effective for those

organizations. Future researchers also could conduct similar studies that focus on other

industries.

Future researcher could conduct additional inquiries into the application of the

complexity theory of leadership. Specifically, future studies should focus on the

interrelationships within a complexity leadership paradigm relative to MIS use and

organizational performance. Knowledge from these studies could contribute to the existing literature of complexity leadership theory.

I also recommend future research that employs other study methodology – specifically quantitative methodology or mixed methods. Quantitative studies could address larger sample sizes, thereby increasing the reliability and credibility of the findings. By using mixed methods, future researcher could gather both qualitative and quantitative data, thereby leading to a deeper understanding of the issue and increasing generalizability. In addition, researchers could develop and validate instruments for measuring complexity leadership. A valid instrument of complexity leadership could pave the way for more studies and could yield more reliable and usable results.

Implications

The findings of this study contributed to the body of literature regarding the complexity theory of leadership. The shift from a production-based to a knowledge-based economy has created the need for MIS use and leadership practices from a complexity paradigm. Traditional leadership theories may no longer be applicable in the current business environment. Study results provided an increased understanding of how leaders perceive the complexity through their MIS practices, which might be helpful to leaders in developing MIS practices that are effective for achieving the objectives of leaders and organizations.

The insights from this study can be helpful for developing the complexity theory of leadership that could lead to more research such as developing instruments to measure

complexity leadership. The information gathered in this study provides useful, practical guidance to leaders wishing to implement a complexity theory of leadership dynamic that will be beneficial to their organizations and to all individuals working within the organizations.

Based on this study, leaders could determine how they can apply complexity leadership combined with MIS use in order to improve their effectiveness in this knowledge-based economy. Organizations could use these findings to train their leaders to apply complexity leadership in their departments and could better understand complexity leadership as a means of increasing organization productivity. Organizations could also focus on improving the motivational skills and communication skills of their leaders, using the study results showing that these skills positively influence productivity and performance.

The findings of the study can lead to positive social change through the promotion of complexity leadership in organizations. The application of more effective leadership practices in a complexity paradigm, in combination with effective leadership as expressed through MIS, could facilitate organizational conditions that are supportive of adaptive problem-solving and team performance. The application of complexity leadership leads to the betterment of employees, supervisors/managers, and organizations in this current knowledge-based economy. If employees, managers, and organizations are functioning effectively, then consumers and the society will benefit as well.

Conclusion

MIS is becoming increasingly important, especially given the recent shift of the business environment towards technology-based systems and from a production-based economy to a knowledge-based economy. As such, there is a need for deeper understanding of the types of leadership that build success in the current knowledge-based economy. This study helped to fill the gap in research regarding effective leadership in a knowledge-based economy (Clarke, 2013; Havermans et al., 2015).

Complexity theory is an alternative to traditional leadership theory. Complexity theory recognizes that interactions between individuals in subgroups can generate novel ideas that drive innovation for an organization (Geer-Frazier, 2014). Complexity leadership regards the interactions within organizations as useful and important (Geer-Frazier, 2014). Uhl-Bien (2013) proposed that the complexity theory of leadership includes five leadership functions that support adaptation: generative designs, administrative leadership, community building, information gathering, and information use. As a result, complexity theory may prove more useful than traditional leadership theories in the current knowledge-based economy.

A total of 10 participants from small- to medium-sized enterprises were recruited for participation in the study. During the semistructured interviews, participants were asked about (a) the roles and responsibilities of leader in the IS department, (b) the accomplished roles and responsibilities of leaders, (c) the tasks of an IS manager, (d) the tasks accomplished within the departments, (e) the impacts of leadership in a need-based

IS, and (f) the impact of leadership on overall performance. I transcribed and member checked all interviews, and used Braun and Clarke's (2014) data analysis procedure. The results revealed three themes: (a) that leaders motivate employees' positive work-related behaviors; (b) that effective communication skills ensure accessibility and efficiency of organizational information system; and (c) that leadership practices influence business productivity.

The results contributed to the body of literature on the complexity theory of leadership. The results also served to inform leaders and organizations about the importance of complexity leadership. And finally, the results promoted positive social change through the improvement of adaptive responses and organizational performance that increase competitiveness of organizations in the current knowledge-based economy.

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Appendix A: Interview Guide for Employees

1. What were the ideal roles and responsibilities of your leader in an information system department?

2. Which of these roles and responsibilities did you experience or witness in your department?

   a. Are these roles and responsibilities accomplished by your manager?

   b. Please cite examples/actual experiences to justify your answers.

3. What the tasks of an information systems department manager?

4. Which of these tasks did you experience or witness in your department?

   a. Are these tasks accomplished by your manager?

   b. Please cite examples to justify your answers.

5. What do you are the impacts of leaders did you experience on the ability of the organization to adapt and respond to the needs based on the use of information systems?

   a. What are the possible areas where your organization can improve on adapting and responding to the needs based on the use of information systems?

6. What do you the impacts of leaders that you experienced on the organization's overall performance?

   a. What are the possible areas where your organization can improve on to reach better organizational performance?

Appendix B: Interview Guide for Managers

1. What are your roles and responsibilities as a leader in an information system

    department?

2. Which of these roles and responsibilities have you actually performed based on

    your experiences of working in your department?

    a. Have you accomplished these roles and responsibilities?

    b. Please cite examples to justify your answers.

3. What are your tasks as information systems department manager?

4. Which of these tasks have you actually performed based on your experiences of

    working in your department?

    a. Have you accomplished these tasks?

    b. Please cite examples to justify your answers.

5. What are the impacts of your leadership on the ability of the organization to adapt

    and respond to the needs based on the use of information systems?

    a. Please cite experiences to as examples that justify your answer in #5.

    b. What are the possible areas where your organization can improve on

        adapting and responding to the needs based on the use of information

        systems?

6. What are the impacts of your leadership on the organization's overall

    performance?

    a. Please cite experiences to as examples that justify your answer in #6.

b. What are the possible areas where your organization can improve on to

reach better organizational performance?