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Emergency Crisis Knowledge Management to Affect Customer Service Response

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Abstract

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Dedication

I am sincerely grateful to all who have supported me during my doctoral journey. I offer a heartfelt thank you to my doctoral chairperson, Dr. Jerry Willis, and committee member, Dr. Cassandra Hyacinthe, for their guidance and commitment toward the shaping of my dissertation. To Dr. Josephine Moffett, my academic advisor, thank you for your continuous support.

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Biographical Sketch

Judith A. Riggs combines service to humanity and business while encouraging others to excel. A strategic thinker who is both innovative and creative, Judith is currently the founder and president of Judith Riggs & Company, Inc., a firm specializing in leadership consulting and training. Prior to her current role, she was founder and president of MIS Technical Resources, Inc., a firm dedicated to information technology consulting and senior-level executive search.

Following her passion and commitment to volunteerism and leadership, Ms. Riggs has selflessly contributed her expertise and leadership to organizational boards for more than two decades. She is the former president of the Westchester Chapter of Jack and Jill of America, Inc., an organization dedicated to providing leadership training, educational and cultural programming, and community service initiatives, for children and teens ages 2-19. Judith completed her tenure and was credited with receiving the coveted National Award for Exemplary Leadership.

Judith has served as a member of the board of directors for The Junior League of Bronxville, The Council of Junior Leagues of Westchester, The New York State Public Affairs Committee, and The Interracial Women's Leadership Roundtable.

Ms. Riggs holds a Bachelor of Arts degree (1978) from Sarah Lawrence College and a Master's of Sciences degree (2012) in Organizational Leadership from Mercy College. She came to St. John Fisher College in the summer of 2012 and began doctoral studies in the Ed.D. Program in Executive Leadership. Ms. Riggs pursued her research in

Emergency Crisis Knowledge Management to Affect Customer Service Response under

the direction of Dr. Jerry Willis and Dr. Cassandra H. Hyacinthe and received the Ed.D.

Degree in Executive Leadership from St. John Fisher College in August 2014.

Abstract

This qualitative case study focused on developing a better understanding of Consolidated Edison's knowledge management/customer service information and communications, as well as practices that were implemented during Hurricane Sandy. The data collection and analysis procedure formed a gap analysis that resulted from a comparison of the actual knowledge management practices that were used and not used in Consolidated Edison's customer response during the catastrophic event. Organizational practices of high-performing knowledge management companies were used to analyze and compare their practices to Consolidated Edison's. Findings from the analysis resulted in the establishment of a Balanced Scorecard framework for recommended best practices and action steps with the potential to set new strategies and trajectories for the organization.

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Chapter 1: Introduction

Introduction

Academics and practitioners recognize knowledge management and service quality as research areas of great interest. Knowledge management has emerged over the past decade in response to the demands and unpredictable nature of the 21st century. Dominant external factors, such as globalization, have affected the operation of the organizational environment. Accordingly, knowledge has surfaced as an extremely valuable asset (Wiig, 1997). Statistics indicate that more than 80% of economic value generated is linked directly to knowledge (Davenport & Probst, 2002).

The knowledge management (KM) domain encompasses many areas, such as managing knowledge, intellectual capital, knowledge economies, and KM systems. Within, and across, these and other areas, KM directs attention to issues related to service quality, information technology, operations, people, and performance (Baskerville & Dulipovici, 2006).

Twenty-first century leadership recognizes that service quality impacts business performance and customer satisfaction (Seth & Deshmukh, 2005). The quality of service reflects the extent to which a delivered service meets or exceeds customer expectations. Delivering superior service quality requires consistently adapting to customer expectations for survival and sustainability in this constantly changing era (Lewis and Booms 1983).

Chapter 1 of this dissertation will discuss the history and state of knowledge management, the problem statement, theoretical rationale, statement of purpose, research questions, significance of the study, definition of terms, and chapter summary.

Knowledge management history: the knowledge-based economy. Housel and Bell (2001) argued that former and current economies have depended on knowledge as fundamental for generating worth. The Industrial Revolution's agrarian economy relied on knowledge for planting and farming. Value was placed on tangible assets, including equipment and land. However, no value was placed on intangible assets, specifically, the farmers' ability to apply farm-related knowledge. Profound change has altered the shape and economic base of society (Davenport & Prusak, 1998). Consequently, the primary source of value creation, productivity, and economic growth, has shifted to knowledge.

The 21st century economy measures organizational wealth based on: the value of existing knowledge, the capacity to generate future knowledge, and the effective exploitation of all knowledge types (Houghton & Sheehan, 2000). Thus, organizations are charged with harnessing and leveraging the knowledge of each member of the organization, that is, the organization's collective intelligence (Florida & Kenney, 1993).

Sixty years ago, the United States dominated world markets. The national and international demand for goods and services was significant; the US accounted for more than 50% of the worldwide average of goods and services produced (Davenport & Prusak, 1998). However, currently, the US share in the world economy is less than 15%, a clear indication that US companies no longer control the global marketplace. This decline suggests that American enterprises can no longer expect that the "products and

practices that made them successful in the past will keep them viable in the future"

(Davenport & Prusak, 1998, p. 13).

Managing in a period of great change forces companies to re-examine past

assumptions (Drucker, 2009); therefore, the big question, what to do, becomes the

mantra, particularly for large companies who have experienced long-term success for the

past century. These organizations are considered icons; however, due to unforeseen

disasters and unmanageable crises, they could decline and may even become extinct.

According to Drucker, the root of the problem is outdated organizational assumptions no

longer fit the current reality. The outdated assumptions dictate the following

organizational behavior, organizational decisions, and organizational definition of

important outcomes. The assumptions are about the customers, the existing marketplace,

the competitors, and the organization's strengths and weaknesses.

Transformational leadership is required to address the outdated assumptions that

have resulted in organizations with fundamental misconceptions. The development of

effective strategies is essential to bridge the gaps. If the gaps are bridged, organizations

will be equipped to chart a sustainable new course of action suitable for the constantly

changing 21st century (Florida & Kenney, 1993).

The state of knowledge management. There is growing recognition that

knowledge is an important economic resource (Dwivedi & Venkitachalam, 2009).

Managing an organization's knowledge has become essential for 21st century business

survival and sustainability and, furthermore, studies have suggested that knowledge is

considered a strategic resource to create and maximize business value (Alavi & Leidner,

2001).

Debate exists regarding KM as a separate discipline because the integrative foundation of KM allows attachment to several disciplines (Nonaka & Peltokorpi, 2006). The domain challenge leads to conceptual plurality. For the purposes of this study, conceptual plurality is defined as the numerous mental representations to explain the empirical data connected with a discipline. Despite the KM debate, Dalkir (2011) argued that KM continues to professionally evolve. Multiple empirical studies have been conducted and numerous articles published on topics related to knowledge strategy, knowledge creation, knowledge sharing, systems, and tacit and explicit knowledge (Hahn & Subramani, 2000).

Further debate in the field concerns people-over-technology issue (Griffiths & Moon, 2011). The debate considers whether KM manages knowledge resources, specifically people, or whether KM is a data management system. Griffiths and Moon acknowledged that misconception guides organizations to consider knowledge resources separate from people. Data is stored in technological systems that, when triggered, are shaped into knowledge through the interactions of people. Organizations are being forced to realize that "knowledge lies less in its databases than in its people" and, further, people are the creators and carriers of knowledge (Brown & Duguid, 2002, p. 121). Leaders, aspiring to create a better future for the organization, are encouraged to see beyond the data and focus on the social context that shapes and provides meaning to the data. Dalkir (2011) argued that within and outside of the organization's boundaries, knowledge is created and transferred via human interactions, technology, processes, and procedures.

Problem Statement

The unpredictable climate of the 21st century has charged today's business enterprises to seek how best to capitalize on knowledge management practices for survival, competitive advantage, and sustainability. Alryalat and Alhawari (2008) stated that organizational survival and competitive advantage result from getting the right information transferred to the right people, instantaneously. Consider, for example, the unprecedented and catastrophic Hurricane Sandy storm that occurred in late October 2012. The Consolidated Edison Company of New York (Con Edison) played a pivotal role in the process of saving lives. People in distress called the North American emergency telephone number (911) or Con Edison's direct telephone line, and the calls were intercepted by Con Edison's voice automation system. The severity of Hurricane Sandy required the utility company's immediate response to customers as electrical fires were erupting, people's homes were sinking, and loss of life and property was at stake. Sadly, the company had difficulty acquiring and transferring knowledge, which resulted in a deficit of service quality and value to the customer.

The utility company's knowledge-acquisition and knowledge-transfer processes were inadequate in responding to customers' needs. Immediate customer response was critical due to the severity of the wind and water damage from the storm. The lapse in response time resulted in inadequate information transfer to the right entity at the right time. The utility company's lack of adequate practices and infrastructure capability resulted in the organization's failure to transfer and share information in real time (Alryalat & Alhawari, 2008). The organization's response to the customer signifies the existence of organizational gaps.

Theoretical Rationale

Case studies are used by best-in-class companies as vehicles for understanding and improving business performance and providing recommendations for solutions to specific problems (Davenport & Probst, 2002). However, while this is a basic assumption in this study, Stake (2005) argued that the case study is not a methodology but a choice of "what is to be studied" (Stake, 2005, p. 435). Popular case studies are still often criticized by positivists because they define research as the search for general truths because they do not believe case studies can produce those types of generalizations. This opinion comes in part from the positivists' assumption that case studies can only be understood through the lens of the traditional scientific method that attributes very little importance to the intense study of one situation or context. As noted above, the low value put on case studies is in part because positivists' research claims to seek generalizable, context independent, and universal knowledge (theory). Case studies may, thus, be used to clear the ground for research or to identify factors that should be the subject of research, but positivists do not believe that case studies constitute a powerful research methodology.

The traditional and positivist view of the limited role of case studies was effectively countered by Flyvbjerg (2006) who passionately addressed and refuted the positivists' criticism. He contended that "conventional wisdom . . . if not directly wrong, is so oversimplified as to be grossly misleading" (Flyvbjerg, 2006, p. 430). Flyvbjerg outlined five misunderstandings to defend his justification of the high value of case-study research. In the following section, the "misunderstandings" are formatted in italics and are followed by an explanation of Flyvbjerg's alternative view.

1. *Theoretical, context-independent knowledge has greater value than practical context-dependent knowledge (which may not exist).* Flyvbjerg (2006) argued that knowledge that is considered context-dependent has greater value because, although both types of research approaches are necessary, the study of human undertakings does not generate universal knowledge. True expertise is very context dependent and, when applied to practice, must be deployed in ways that consider the context as well as the history of that context. Case studies, by their very nature, produce the kind of context-dependent knowledge that is needed by practitioners.

2. *Generalizations cannot be made on the basis of a single case; hence, the case study does not add to scientific development.* Flyvbjerg (2006) contended that the weight of a single exemplar is undervalued. Flyvbjerg strengthened his argument by referring to individual cases, experiments, and experiences, including some by Einstein, Galileo, Darwin, Newton, and Freud. Flyvbjerg defended his position by noting that both natural and human sciences advance by a single individual case. Formal generalizations, based on big samples, are overvalued in terms of their impact on scientific progress.

3. *Case study is most useful for producing hypothesis in the first segment of the research process; whereas, other methods are better suited for hypothesis testing and theory building.* Flyvbjerg (2006) insisted that case studies have a much broader role to play. He argued that case studies are beneficial for both producing and testing hypotheses, though they are not restricted to such activities.

4. *Case study has a verification bias and confirms the preconceived notions of the researcher.* Flyvbjerg (2006) argued that case studies have no greater bias toward confirming preconceived notions than do other research forms.

5. *Case study has difficulty being summarized into general propositions and theories.* Flyvbjerg (2006) asserted that difficulty in the summarization of case study data arises from properties of the realities studied as opposed to the research method used. It is the real world that is at fault. It is complex, multifaceted, and inter-related. Trying to produce simple, general propositions about how it operates, as many positivist theories do, may result in misleading and inaccurate knowledge that is difficult, if not impossible, to apply.

Flyvbjerg (2006) was not eager to debate about the methods of the natural sciences and those of the social sciences. On the contrary, he emphasized the merits of both. His claim was that the strengths and weaknesses are dissimilar along various dimensions of knowledge. "The social sciences are strongest where the natural sciences are weakest" (Flyvbjerg, 2006, p. 3). He thus took the position that because the subject matter of the social sciences are different from the subject matter of the natural sciences, they require different research methods and, in fact, a different approach to research.

Despite the criticism and scrutiny of case-study methodology, my research study utilizes qualitative case study to further professional practice. This knowledge management tool facilitates learning from real-life situations and, furthermore, encourages team members to acquire and share collective knowledge for organizational problem solving.

Statement of Purpose

The purpose of this qualitative case study is to better understand the use of knowledge management practices to inform and impact value to the customer in light of Consolidated Edison's response to Hurricane Sandy.

Research Questions

1. What were the knowledge management practices utilized by Consolidated Edison during the Hurricane Sandy crisis?

2. Considering the weaknesses identified in knowledge management practices, what knowledge management best practices might benefit Consolidated Edison customers?

3. What processes or procedures might facilitate the transformation from poor knowledge management practices to best knowledge management practices?

Significance of the Study

Research is imperative to examine the response of Consolidated Edison during and after the Hurricane Sandy disaster. The research study under investigation is original given the fairly recent occurrence of the catastrophe. No other research on the topic is available.

The research is of great value because Consolidated Edison, founded in 1823, is one of the largest investor-owned energy companies in the United States. The company provides a wide range of energy-related products and services to its customers, a captive audience. Of particular interest is the fact that the company has been in existence for almost two centuries. However, due to its stature as an energy icon, the company is accustomed to operating under the theme of "business as usual." Davenport and Prusak (1998), however, argued that companies can no longer continue to operate under the misconception of "business as usual." Yesterday's assumptions no longer fit into today's reality. Nonetheless, the assumptions about the organization's strengths, weaknesses, and customers, dictate the organization's behavior, decisions, and response when faced with

what to do, especially during crises (Drucker, 2009). Consequently, when the catastrophic Hurricane Sandy occurred, the organization chanted, "What do we do?" while the customers shouted, "Help!" to an unresponsive organization.

Definitions of Terms

For the purpose of this study, the following is a list of definition of terms.

Agrarian Economy – an economy that relies on farming.

Collective Intelligence – the shared or group intelligence emerging from collaboration.

Conceptual Plurality – more than one representation to explain all of the empirical data for which concepts are responsible (Nonaka & Peltokorpi, 2006).

Global Marketplace – the buying, selling, or value of goods/services sold all over the world.

Industrial Revolution – the process of change from an economy dominated by agriculture to an economy dominated by industry and machines.

Information Age – the computer or digital age, which began in the 1970s, is characterized by the abundant manipulation of information.

Intangible Assets – assets that are not physical such as patents, copyrights, trade names, government license, franchise license, and goodwill.

Intellectual Capital – the knowledge, insights, or intangible assets added to the net worth of the firm, to derive the total value of the firm (Kaplan & Norton, 2004).

Knowledge Economy – an economy in which knowledge is the key resource. "The generation and exploitation of knowledge play[s] a predominant part in the creation of

wealth. The more effective use and exploitation of all types of knowledge, in all manners of economic activity" (Houghton & Sheehan, 2000, p. 1).

Knowledge Management – the "systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets" (Wiig, Hoog, & Spek, 1997, p. 8).

Knowledge – knowledge provides a framework for evaluating and incorporating new experiences and information. Knowledge originates and is applied in the minds of knowers and within organizations. "Knowledge often becomes embedded not only in documents or repositories, but also in organizational routines, processes, practices, and norms" (Davenport & Prusak, 1998, p. 5).

Tangible Assets – assets that have physical form such as capital, building, machinery, land, and inventory.

Value Creation – the primary aim of any business entity is to create value for customers and shareholders.

World Market – The aggregate of all national markets linked through mutual economic and trade relations.

Chapter Summary

The new economy has transitioned society from an Industrial Age to an Information Age. The epochal shift, marked by globalization, climate change, and rapid technological advances, has positioned knowledge as the prime commodity and catalyst for competitive advantage, sustainability, and survival in the 21st century. Consequently, organizations must be resilient by surrounding themselves with the necessary resources to survive and thrive, despite the constantly changing nature of this era.

Business as usual is no longer adequate for organizational existence. Therefore, enterprises are forced to re-examine old assumptions about former practices. Thus, transformational leaders are charged with closing the gaps by developing and implementing appropriate strategies to move organizations forward. Knowledge management and customer service practices and strategies will provide the bridge to a better future (Davenport & Probst, 2002).

This chapter provided a framework for examining the critical shifts in the demands of the 21st century and the value and emphasis placed on the effective management of knowledge. The case study methodology approach is subject to criticism and scrutiny. The limited role of case studies has been effectively countered by Flyvbjerg (2006) who passionately addressed and refuted the criticism and justified the high value of case-study research.

Chapter 2 will provide an in-depth review of the literature and research relevant to this case study. The research design methodology for this study will be discussed in Chapter 3, and Chapter 4 will provide the results and explanation of the findings. Finally, Chapter 5 will include discussion, implications of the findings, limitations of the study, and recommendations.

Chapter 2: Review of the Literature

Introduction and Purpose

The knowledge economy has forced 21st century organizations to focus on knowledge management practices to improve performance and inform and impact organizational value. Therefore, organizations are adopting KM practices and processes to manage the knowledge that adds value to their enterprise. The application of the collective knowledge and capability of the organization's workforce is critical for value creation to the organization and to the customer.

The purpose of Chapter 2 is to provide a summary of empirical studies and literature that focuses on knowledge management processes and customer-oriented business models that impact organizational performance and service quality to customers.

Knowledge management. Knowledge management's implication is that knowledge can be managed. However, Wiig (1997) argued that knowledge management is a collection of processes directed at constructing, capturing, storing, sharing, applying, and recycling knowledge. Wiig's definition received criticism (Alavi & Leidner, 2001; Parikh, 2001) for representing KM as a collection of sequential and mechanistic process steps, and focusing on explicit knowledge, alone, as opposed to tacit knowledge. Knowledge management has been further defined as an organization's systematic and specified process for acquiring, organizing, and communicating, productivity (Davenport & Pruzak, 1998). In this regard, KM provides an approach to maximize the use of data and information in the area of greatest need. KM is also considered a process for

distributing the right knowledge to the appropriate people and groups at the right time (Coakes, 2003).

Organizations are motivated to implement KM to create, communicate, and share knowledge, both internally and externally. These actions prevent organizational loss of knowledge resulting from employee termination, retirement, and downsizing (Sun & Hao, 2006). By constructing an organizational economy, organizations are driven to implement KM to maintain a vibrant workforce and advance human capital. The benefits of KM are to enhance productivity and gain competitive advantage through implanting KM processes into daily work-related actions (Liebowitz, 1999).

Knowledge management also connects to a better understanding of the organization's customers, the market, and its competition, through acquiring and generating knowledge to stimulate innovation. Effective KM facilitates the maintenance of good customer relationships by improving customer knowledge and accelerating response to customers (Yildizoglu, 2001). KM processes improve consistency of customer service quality, which is the focus of the dissertation research presented in the current document.

Knowledge management process models. Examination of these processes reveal that knowledge management research discloses three process models for knowledge management. The KM process models include KM cyclic model, KM waterfall model, and KM spiral model.

In the KM cyclic model, Blumentritt and Johnston (1999) drew together fundamental KM thinking that distinguishes between information and knowledge by providing a framework that condenses several strands of thinking about knowledge.

Scholars assert that KM has been concerned with knowledge creation, acquisition, and flow, and categorize knowledge in their own framework. They recognize the increasing difficulty associated with converting knowledge into information. The researchers dispute the argument that Information Systems (IS) is interchangeable with KM systems and argue that knowledge exists solely in individual's minds. In response, have developed a model that demonstrated the linkages between knowledge and information. The KM cyclic model developed by Blumentritt and Johnston resembles Nonaka's (1994) knowledge spiral model, demonstrating it within the context of the knowledge transformation cycle, from knowledge to information and back to knowledge.

The KM waterfall model is concerned with the management of the KM process. Sun (2004) argued that the actual knowledge management process has been overlooked and the resolution to being overlooked is to divide the key stages of KM into specific processes. KM is more than the storage and manipulation of data or information. The discipline focuses on the processing of knowledge and its subsequent management, which infuses various processing stages.

The processing stages of the KM waterfall model include:

1. use/understanding of knowledge,

2. expanding and discovering knowledge,

3. acquiring/capturing knowledge from various sources,

4. selecting, filtering, and classifying existing knowledge,

5. identifying storage structures for knowledge keeping,

6. designing knowledge ontology,

7. creating, generating, and adapting new knowledge,

8. evaluating knowledge,

9. visualizing knowledge,

10. transferring/distributing knowledge, both internally and externally,

11. sharing, utilizing, and applying knowledge, and

12. retaining/maintaining knowledge as a strategic organizational asset.

Sun (2004) further argued that the processing stages can be interchangeable in execution. Later stages are, at times, the basis for former stages. An illustration of this is knowledge ontology, which is the basis for further knowledge processing that includes knowledge generation, knowledge creation, knowledge storage, and knowledge classification. In addition, knowledge creation can be the result of knowledge sharing, and knowledge sharing can motivate creation of new knowledge. The waterfall model is capable of encompassing some aspects of KM; however, the KM spiral processing model also reflects the interrelationship between the stages of the Waterfall Model.

Alternatively, in the KM spiral model, Nissen and Levitt (2002) and Nonaka (2004) examined the powerful interaction between tacit and explicit knowledge. Nonaka and Takeuchi (1995) used the concept of tacit and explicit knowledge as they are applied in Japanese corporations. The researchers observed how Japanese companies generated new knowledge within their corporations. They argued that the Japanese corporations' focus on tacit knowledge, and the transformation of tacit knowledge into explicit knowledge is a critical process that contributes to their innovation and success (Nonaka & Takeuchi, 1995).

In the KM spiral model, there are four processes: socialization, externalization, combination, and integration. The processes enable the amplification of individual

knowledge and influence the crystallization of organizational knowledge. Nissen and Levitt (2002) adapted Nonaka's (1994) KM spiral model to explain the dynamic flow of knowledge. Review of the literature surrounding this model outlines how the flow of knowledge is disseminated throughout organizations and what types of management interventions can be established to enhance knowledge flow. Their KM spiral model embeds knowledge flow into the organization's day-to-day workflow for distribution throughout the enterprise.

The KM spiral model describes constant and repetitive knowledge flows that constitute the bulk of the work of organizational knowledge. The interaction between epistemology and ontology are detailed as used by Nonaka (1994) as the primary method to explain knowledge flow throughout an organization (Nissen & Levitt, 2002). The flow of knowledge is categorized by four organizational processes, which include:

1. tacit to tacit (socialization),

2. tacit to explicit (externalization),

3. explicit to explicit (combination),and

4. explicit to tacit (internalization) (Nonaka, 1994).

The examination of the KM cyclical, KM waterfall, and KM spiral models indicate that no single model exists that speaks to all of the significant knowledge processes. However, this researcher selected the KM spiral model as most important to the research under study because the model includes explicit and tacit knowledge, which helps explain the knowledge flow throughout organizations. Both areas of knowledge are crucial to the understanding of knowledge management practices, specifically, the

dynamics of knowledge generation and knowledge transfer and their value creation to the organization and customer.

The organization. In order to understand the impact of knowledge management in the 21st century, it is important to note that organizations have been confronted with external driving forces. The forces include climate change, globalization, and knowledgeable customers (Wiig, 1997). The sustainability of organizations is dependent on their performance response to external forces, particularly customers. Wiig argued that customers have become more vocal about service requirements, service quality, and quicker response time. In addition, consumers are demanding innovativeness of products and services (Bueren, Schierholz, Kolbe, & Brenner, 2005). Organizational response requires:

1. adapting swiftly,

2. understanding customer needs,

3. implementing innovative practices,

4. adopting new technologies, and

5. learning continuously, which builds individual and organizational knowledge and capacity (Senge, 1990).

Review of the literature demonstrates that the significance of an organizations' response to customers is connected with the quality of the response, which can be determined by the amount of time taken to respond to the customer, the content, and the value of the information (Sugandhi, 2003). Furthermore, Sugandhi (2003) contended that customers derive certain messages from the quality of the response; in particular, the importance an organization attaches to customers and the system in operation at the

organizational site. The response, also known as the "information transfer" from organization to customer, speaks to the customer about the organization's culture. The information transfer reveals:

1. the organizational attitude (behavior), that is, helpful or indifferent, and

2. the customer perception of the information transfer, that is, full explanation, partial explanation, no explanation.

The response/information transfer discloses an organization's efforts and empathy, and finally, an organization's clarity or lack thereof. Hence, the response to the customer provides feedback to the customer on organizational behavior and performance. The response affects the value the customer places on the organization.

Service quality. The well-respected five-gap model of service quality, built by Parasuraman, Zeithaml, and Berry (1985), is considered the cornerstone in service quality research. The model establishes the measurement and structure of service quality. My analyzed data was gathered from in-depth interviews with executives in senior management, operations, marketing, and customer relations, as each area has impact on service quality. Fourteen senior executives, from US companies, were interviewed about service quality issues including:

1. what their perceptions of service quality was from the customer's perspective,

2. what action steps were taken to control/improve the quality of service, and

3. what issues were encountered in the delivery of high-quality services.

Discussions focused on customer experiences and perceptions relating to service. Consistent patterns and commonalities among industries validated the existence of a

general model of service quality. The significant insight obtained from analysis of senior

executive responses indicated:

A set of key discrepancies or gaps exists regarding executive perceptions of

service quality and the tasks associated with service delivery to consumers. These

gaps can be major hurdles in attempting to deliver a service which consumers

would perceive as being of high quality (Parasuraman, Zeithaml, & Berry, 1985,

p. 44).

Service gap 1. The customer-expectation/management-perception gap revealed

discrepancies between the executive's perspectives and customer expectations. In short,

executives of service firms may not understand, in advance:

1. what service features suggest high quality to customers,

2. what service features are necessary to meet customers' needs, and

3. "what levels of performance on those features are needed to deliver high-

   quality service" (Parasuraman, Zeithaml, & Berry, 1985, p. 44).

The suggestion is that the gap between customer expectations and management

perceptions of those expectations impact the customer's evaluation of the quality of

service.

Service gap 2. Parasuraman, Zeithaml, and Berry (1985) argued that the

management-perception/service-quality specification gap exposed an organization's

struggle to meet or exceed customer expectations. Executive constraints often prevented

delivery of customer expectations. For example, executives in certain industries were

cognizant that customers view quick response time to "breakdowns" as a vital component

to high service quality. However, constraints centered on the lack of trained service

employees. Numerous situations exemplified that knowledge of customer expectations

exists but the method to deliver on those expectations did not. Thus, the consequence of

factors, including resource constraints and management indifference, may result in the

inconsistency of management's perceptions of customer expectations and the firm's

service-quality specifications. These discrepancies shape the customer's perception of

service quality (Parasuraman, Zeithaml, & Berry, 1985)

   Service gap 3. According to Parasuraman, Zeithaml, and Berry (1985), the service

quality-specifications/service-delivery gap occurs despite existing guidelines for good

performance of service and treatment of customers. Thus, despite guidelines/directives,

high-level service performance may not occur. Senior executives acknowledge that a

service company's employees have considerable influence on the quality of service

perceived by customers. Furthermore, the performance of employees can be

unpredictable. "Everything involves a person . . . it's so hard to maintain standardized

quality . . . [because] there is variability in employee performance" (Parasuraman,

Zeithaml, & Berry, 1985, p. 45). The service-quality specifications/actual service-

delivery gap affects customer perception of the firm's quality of service.

   Service gap 4. Parasuraman, Zeithaml, and Berry (1985) affirmed that service-

delivery/external-communications gap and customer expectations are shaped by media

publicity and other modes of communication. Companies must deliver to customers that

which is promised in external communication. Failure to deliver results in reduced

customer perceptions of service quality. Furthermore, executives recognize that the

service-quality perceptions of customers are impacted by the company's lack of

transparency to customers about the extreme efforts undertaken behind the scenes to assure quality of its service.

Customers are, at times, unaware of the deliberate efforts to better serve them. External communication affects customers' service expectations and customers' perceptions of the service delivered. Exaggerated promises, and/or lack of information about aspects of service delivery, which are designed to benefit customers, can influence customer perceptions of the quality of service. The suggestion is that the discrepancy between external communications about service and actual service delivery influences the customer's perception of service quality (Parasuraman, Zeithaml, & Berry, 1985).

Service gap 5. Parasuraman, Zeithaml, and Berry (1985) maintained that the expected-service/perceived-service gap is connected to the belief that good service quality is defined as meeting or exceeding customer expectations of service. Customers rate a service as poor or exemplary based on how well the company exceeded the customer's expectations. For example, if the individual delivering the service takes an additional step to provide greater service delivery, the customer rates the company's service as exemplary. Thus, the customer's perception of low and high service quality is dependent upon the customer's performance perception of the service. The discrepancy between the expected and perceived services is based on the magnitude of the gap between the customer's perceived service and actual service performed.

Customer satisfaction. Review of the literature reveals a limited number of studies that examined determining factors of customer satisfaction other than quality of service. Research indicated that price had an impact on customer satisfaction in the service industry (Voss, Parasuraman, & Grewal, 1998). Customers observe

organizational service-delivery performance and endure price increases when price and performance are perceived as consistent. Conversely, when price and performance are perceived as inconsistent, customer satisfaction is negatively impacted, and customers consider rate increases unfair.

Cardozo (1965) introduced the concept of consumer satisfaction into the marketing field that had previously tended to focus on service quality. The two terms were interchangeable prior to Parasuraman, Zeithaml, and Berry (1994) who provided clarity for the definitions of consumer satisfaction and service quality. The term consumer satisfaction relates to the customer's perception and expectation of the level of service. Howard and Sheth (1969) defined consumer satisfaction as a psychological state that related to what customers receive and what they give. Churchill and Surprenant (1982) believed that customer satisfaction resulted from the purchase and use of a product and the expected reward relative to the purchase cost. Oliver (1981) defined customer satisfaction as a psychological state with an existing discrepancy between emotion and expectation that was influenced by a prior purchase. On the contrary, Churchill and Surprenant (1982) examined a durable goods company and determined that the critical factor for customer satisfaction was product performance.

Zeithaml (1988) contended that perceived quality can be defined by implication, as the judgment of the consumer related to the excellence of the product. Main (1994) argued that organizations predominantly adopt their definition of quality from the market's viewpoint, rather than from objective quality.

Knowledge management for customer service. Bueren et al. (2005) argued that the information age has challenged organizations because customers are demanding higher

quality and innovative services and products. The customer has driven organizations to adapt quickly, despite the organizational challenge to reduce costs. To meet those new consumer demands and remain profitable, new strategies are required to transform business models into customer-oriented business models that add value to the customer and the organization.

Organizational attention to customer processes requires customer-focused enterprises to:

1. deliver the knowledge demanded by customers,

2. process the knowledge received by customers, and

3. retain knowledge about customers.

The development of knowledge to support business processes is the task assigned to knowledge management.

The research of Bueren et al. (2005) focused on customer relationship management (CRM), which includes the management of customer interactions, combined with the application of KM concepts. The researchers argued that their approach empowered organizations to enhance knowledge support of their customer-focused business processes with the intention of improving the company's overall performance. Hence, the customer knowledge management (CKM) process model was the outgrowth and integration of KM and CRM. Bueren et al. argued that KM can be applied together with business processes and, thus, focus on the application of KM within CRM.

The research exemplifies customer-focused strategic skill management as:

1. essential to support challenging customer-service processes,

2. crucial to improve organizational ability to respond quickly, and

3. a requirement to enhance the skill set of the entire organization.

The researchers identified a gap that exists with employee skills in the customer-service business units. The need for appropriate skills, flexible knowledge toward the customer, and organizational training, is crucial for supporting customer-service processes.

Rust and Huang (2012) argued that companies use automation to reduce labor and increase service productivity. However, the study revealed that greater automation use does not always result in higher quality of service. Effective automation as a service provider is dependent upon whether or not the technology has been updated to accommodate the current needs assessment. The researchers departed from the consideration of productivity as an output measure of organizational performance and suggest service productivity be considered as a strategic decision variable. Thus, the firm manages the level of service productivity to maximize profit margin. Rust and Huang developed an optimal service-productivity theory that explained when the level of optimal productivity will be lower or higher. The researchers differentiated between short-term effects of service productivity as a result of the trade-off of labor automation and the long-term effects of services productivity as a result of technology advancement. The researcher's theory encouraged the development of three empirical hypotheses that are confirmed with data from hundreds of service companies. The research indicates that service productivity should be reduced when factors, such as greater profit margin and higher price, motivate better service quality. Service productivity should be increased when factors, such as higher wages and greater attention to markets, discourage better service quality. The results of the study provide initial evidence that large service

organizations may have a tendency to be very productive relative to the optimal level. If so, then in the short-term, less emphasis should be placed on cost reduction through automation and more emphasis should be placed on quality of service.

Bueren et al. (2005) further argued that knowledge management processes can improve the performance of customer relationship management through information technology. The knowledge support enhances performance based on the CRM process, which recognizes the sub-processes of CRM and the facets of KM, including knowledge transparency, knowledge dissemination, knowledge development, and knowledge efficiency.

Chapter Summary

The review of literature has provided a summary of empirical studies and literature that examined effective knowledge management and customer-oriented business models that affect organizational performance and service quality to customers. In addition, gaps in executive perceptions of service quality and tasks related to customer service delivery, were examined as well as the effects of automation on service quality.

Chapter 3 will provide the research design methodology for the qualitative research under study.

Chapter 3: Research Design Methodology

Service quality has surfaced as an area of great concern to practitioners and researchers because of its tremendous impact on business performance and customer satisfaction (Seth & Deshmukh, 2005). The quality of service reflects the extent to which a service meets or exceeds customer requirements and expectations. If expectations are greater than performance, quality is perceived as unsatisfactory and, consequently, customer dissatisfaction follows (Lewis & Mitchell, 1990).

Statement of the Problem and Purpose of the Study

World-class business organizations view knowledge as the most valuable strategic asset for survival and sustainability (Davenport & Prusak, 1998). However, organizations that play a critical role in the life of society often do not capitalize on best practices of knowledge management to enhance service quality. Despite the rapid pace of change that is characteristic of the 21st century, many organizations have failed to become outwardly focused, market oriented, and knowledge driven. The failure to look externally, in order to enhance existing resources and capabilities, has resulted in competitive disadvantages and risk to organizational sustainability (Davenport & Prusak, 1998).

Greater organizational performance requires management and practitioners to identify current practices, both adequate and inadequate, and seek best practices for knowledge acquisition and knowledge transfer. Furthermore, appropriate procedures, methods, and instruments, which ensure an inward flow of ideas, build stronger

capabilities, and discover gaps, are required. This action will redirect the organizational

trajectory toward a better future (Figure 3.1).

Figure 3.1 explains how performance and value can be driven by the exchange of

knowledge-acquisition and knowledge-transfer practices to improve organizational

response and service delivery to the customer.
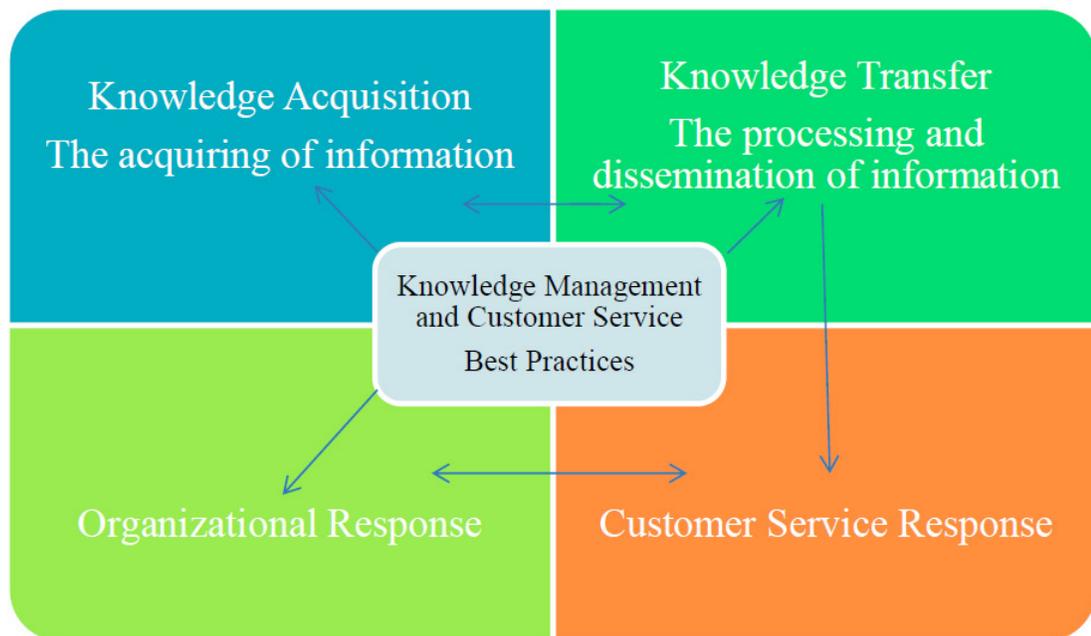
Figure 3.1. Knowledge Management Flow to Improve Performance and Customer Value.

Each of these efforts can become part of an organization's strategic planning initiative

that, when shared with stakeholders, facilitates a transfer of ideas that recognizes gaps

and enhances capabilities through the sharing of knowledge.

The purpose of this study was threefold:

1. identify the organizational practices used by Consolidated Edison during the

    Hurricane Sandy disaster,

2. compare Consolidated Edison's practices to the best practices of exemplary

   companies, and

3. use the information obtained to propose a pathway from current knowledge

   management practices to exemplary practices for Consolidated Edison.

Three questions served to guide the study and informed the selected methodology. The questions were:

1. What were the knowledge management practices utilized by Consolidated

   Edison during the Hurricane Sandy crisis?

2. Considering the weaknesses identified in knowledge management practices,

   what knowledge management best practices might benefit Consolidated

   Edison customers?

3. What processes or procedures might facilitate the transformation from poor

   knowledge management practices to best knowledge management practices?

Research Design Method

The study was conducted using a qualitative research design including case study methods. While there were several possible qualitative approaches considered for the purposes of exploring the selected topic, case study was determined to be best suited to explore a singular event over which the researcher had little influence or input. This assertion has been supported in previous research using the identified methodology. Specifically, Yin (2002) declared that explanatory-exploratory case study is the preferred strategies when "the investigator has little control over events, and . . . the focus is on a contemporary phenomenon within some real-life context" (p. 1).

Historically, case study is of value for understanding situations of uncertainty and instability because of the generation of new knowledge that is applicable in the specific context of the case study, as well as other similar contexts (Cooper & Morgan, 2008). Many companies use case studies as vehicles for understanding and improving business performance and providing recommendations for solutions to specific problems (Davenport & Probst, 2002).

In this study, case study was treated as a broad and flexible methodology for conducting research that used several different data collection techniques. However, while that is a basic assumption in this study, Stake (2005) argued that the case study is not a methodology, but a choice of "what is to be studied" (p. 435). Flyvbjerg (2006) justified the value of case study research by refuting the positivists' view of the limited role of case study. Flyvbjerg outlined five misconceptions as detailed in the Theoretical Rationale section in Chapter 1. For these reasons, case study was selected as the methodology of choice that examined the problems identified and, furthermore, as a result of questions posed by the research related to knowledge and customer service.

Research Context

Consolidated Edison, Inc. is a utility company founded more than 180 years ago. The organization is one of the largest investor-owned, energy-delivery companies in the U.S., and it is headquartered in New York City in the borough of Manhattan. Con Edison has no statement of vision. The company employs 13,000 people in the New York City and lower Westchester County areas. Con Edison serves 3.4 million customers in the same geographical area (http://coned.com/history).

The company's mission statement is "to provide energy services to our customers safely, reliably, efficiently, and in an environmentally sound manner; to provide a workplace that allows employees to realize their full potential to provide a fair return to our investors; and to improve the quality of life in the communities we serve" (http://coned.com/history). Con Edison has six guiding principles and corporate values that include:

1. plan the work and work the plan,

2. seek and accept responsibility,

3. communicate openly,

4. work in teams,

5. improve continuously, and

6. celebrate success.

The company's tenets were integrated in an organizational culture statement entitled "The Way We Work" (http://coned.com/history).

Consolidated Edison Company of New York is one of the subsidiaries of Con Edison, Inc. and provides electrical service in New York City and most of Westchester County. In addition, Con Edison owns and operates the world's largest district steam heating system and provides steam service in several areas within Manhattan. The company also provides natural gas service to the boroughs of Manhattan, Bronx, sections of Queens, as well as Westchester County. Con Edison's call and service centers are located in Manhattan, Brooklyn, Staten Island, and Rye, NY.

While Con Edison operates in a challenging and unpredictable business environment, there were serious questions surrounding the company's organizational

performance and service quality based on responses to customers and stakeholders during the Hurricane Sandy crisis. The assessment of Con Edison's performance was obtained from the sources outlined in the Research Participant section.

Research Participants

Three Con Edison former and current employees were interviewed: Patricia, Steven, and Arthur. Patricia and Steven were responsible for managing customer communication and relations, and Arthur worked in field services. The interviewees were contacted in advance to introduce the study and request participation in the structured interviews. All potential interviewees agreed to participate in the study. One-on-one interviews were scheduled at their convenience, allowing approximately 60 minutes with each interviewee. Three days prior to the scheduled interviews, a reminder/confirmation telephone call was made to each interviewee.

Instruments Used in Data Collection

Data collection focused on Consolidated Edison's knowledge management practices and customer-service quality during Hurricane Sandy. Two forms of data collection were used that provided responses to this study's research questions. Archival data served as the primary source of data collected for analysis in the study. Structured interviews were the secondary source of data collection.

This study used the following instruments for data collection purposes, which offered a unique and overlapping perspective. The instruments represent archival data from: the Public Service Commission (PSC), *The Moreland Commission on Utilities Storm Preparation and Response Final Report* (Moreland), *Consolidated Edison Company of New York, Inc. Shared Services Panel Electric Testimony (S Services)*, and

The Impact of Hurricane Sandy on Consolidated Edison of New York: Assessment of Restoration Efforts and Recommendations for the Future Position Paper of the Utilities Workers Union of America (UWUA).

Three electronic business databases were used to search for relevant material. They included:

1. Business Source Complete,

2. Gale Business Insights Essentials, and

3. Hoover's Company Records.

Three general media sources were also be used:

1. Communication & Mass Media Complete,

2. Gannett Newsstand Complete, and

3. Historical Index to the New York Times.

The interviews consisted of 20 open-ended questions (Appendix A). The questions were designed to collect additional information about Con Edison's practices as it related to knowledge management and customer service during Hurricane Sandy.

The interviews were recorded with the consent of the interviewees and the researcher took notes. A transcription specialist transcribed the data from the recorded interviews. Data collection for gap analysis was used to inform the identification and evaluation of factors and practices that impacted the knowledge transfer for emergency response and customer service.

Data Procedures for Data Collection and Analysis

The case study provided the context of information for the completion of a gap analysis, which is a process that compares an organization's existing operations to where

the organization would like to be from a best practices perspectives. The Con Edison case study looked intently at the data from both archival records and interview transcripts, drawing conclusions regarding the specific content within emergency response, customer service quality, and communication, including knowledge acquisition and knowledge transfer. In accordance with the case study protocol, the case study investigator kept in mind the specific research question(s) while collecting data and drawing conclusions (Creswell, 2009, Smith, Flowers, & Osborn, 2009).

Case study methodology was also used to analyze data related to the best practices of high-performing companies that have excelled in knowledge management and customer-service practices. An analysis of the research literature focused on AT&T, the General Electric Company (GE), and the International Business Machines Corporation (IBM). The companies' exemplary practices were compared to the practices of Con Edison. For this study, the focus was on the practice of knowledge management as it related to quality of service. The study also examined Con Edison's gaps resulting from the comparison of the actual knowledge management practices that were used and those practices that were not used in response to its customers during Hurricane Sandy.

This examination allowed the researcher to focus on the first question posed by the study:

1. What were the knowledge management practices utilized by Consolidated Edison during the Hurricane Sandy crisis?

Once the KM practices were determined, the research focused on questions 2 and 3 posed within the study.

2. Considering the weaknesses identified in knowledge management practices, what knowledge management best practices might benefit Consolidated Edison customers?

3. What processes or procedures might facilitate the transformation from poor knowledge management practices to best knowledge management practices? Understanding this transformation involved a comparison of Consolidated Edison's behavior to that of exemplary companies using archival data and personal interviews.

This study used the Kaplan and Norton's (2004) Balanced Scorecard to provide a knowledge management framework for a set of recommended changes offered to the company by an external evaluator. The Balanced Scorecard was a powerful tool for measuring the assets of the organization through the framework of four perspectives: finance, customer, internal, and learning and growth (Kaplan & Norton, 2004). Consolidated Edison's practices were found to be less than exemplary; therefore, findings were designed to suggest ways in which the company could transition to exemplary practices. The Balanced Scorecard mapped the solution for Con Edison's transformation from poor knowledge management practices to best knowledge management practices (Kaplan & Norton, 2004).

Figure 3.2. Overview of Con Edison's qualitative study design.

Chapter Summary

During the past two decades, service quality has surfaced as an area of great concern to practitioners and researchers because of its tremendous impact on business performance and customer satisfaction (Seth & Deshmukh, 2005). World-class companies utilize case studies as vehicles for understanding and improving business performance and, furthermore, providing recommendations for solutions to specific problems (Davenport & Probst, 2002).

The competitive and rapidly changing 21st century markets force leadership to expand their learning and growth by identifying and evaluating methods and practices that drive organizational performance. External analysis and internal best practices are both necessary to compare practices utilized by best-in-class organizations. Development

of appropriate action steps charts a new trajectory to increase organizational performance, service quality, and customer satisfaction. The maximization of best practices enables organizations that play a critical role in the life of society to minimize risks to their competitive advantage and sustainability in the 21st century.

This chapter provided the research design methodology, an in-depth discussion of case study methodology, research context, research participants, instruments used in data collection, and data procedures for data collection and analysis. Chapter 4 will provide the results of the study, data analysis and findings, and the summary of the results.

Chapter 4: Results

Chapter 4 reports the findings of the qualitative case study that examined the emergency, knowledge management practices used by an organization to affect customer service response. The purpose of this study, as outlined in Chapter 1, was to identify the organizational practices used by the Consolidated Edison Company of New York during the Hurricane Sandy disaster; compare Con Edison's practices to the best practices of exemplary companies; and use the information obtained to propose a pathway from current knowledge management practices to inform implementation of exemplary practices.

Broad themes and patterns emerged from the analysis of recurring messages that were derived from three different types of data sources. The data sources included archival data, interviews, and reflective notes. The research questions, data analysis and findings, and summary of results constitute the bulk of this chapter.

Research Questions

The following research questions were the focus of the study:

1. What were the knowledge management practices utilized by Consolidated Edison during the Hurricane Sandy crisis?

2. Considering the weaknesses identified in the knowledge management practices, what knowledge management best practices might benefit Consolidated Edison customers?

3. What processes or procedures might facilitate the transformation from poor knowledge management practices to best knowledge management practices?

Organizational Summary

In order to provide a context for the study, it was imperative to develop an understanding of the organization and practices under examination. This involved a review of by the Consolidated Edison Company of New York.

Consolidated Edison is a utility company founded more than 180 years ago. The organization is one of the largest investor-owned, energy-delivery companies in the US, and it is centrally headquartered in New York City in the borough of Manhattan. Review of organizational materials resulted in the conclusion that Con Edison does not convey any written vision statement. The company employs approximately 13,000 people in the New York City and lower Westchester County areas. It provides utility services to more than 3.4 million customers in the same geographical area.

The company's mission statement indicates that "Con Edison will provide energy services to our customers safely, reliably, efficiently, and in an environmentally sound manner" (http://coned.com/history). Furthermore, "Con Edison works to provide a workplace that allows employees to realize their full potential to provide a fair return to our investors, and to improve the quality of life in the communities we serve" (http://coned.com/history). The company's six guiding principles and corporate values include: plan the work and work the plan; seek and accept responsibility; communicate openly; work in teams; improve continuously; and celebrate success. The company's tenets have been integrated into an organizational culture statement entitled *The Way We Work* (http://coned.com/history).

Consolidated Edison Company of New York is one of the subsidiaries of Consolidated Edison, Inc., and it provides electrical service in New York City and most of Westchester County. In addition, Con Edison owns and operates the world's largest district steam-heating system and provides steam service to several areas within Manhattan.

Con Edison also provides natural gas service to the boroughs of Manhattan, Bronx, sections of Queens, as well as Westchester County. Con Edison's call/service centers are located in Manhattan, Brooklyn, Staten Island, and Rye, NY. While Con Edison operates in a challenging and unpredictable business environment, there were serious questions surrounding the company's organizational performance and service quality based on the response to customers and stakeholders during the Hurricane Sandy crisis. The following highlights the process used, and the findings from, the study.

Data Analysis and Findings

The data analysis process consisted of phases including:

1. organizing data for analysis,

2. conducting a scan of data for "major organizing ideas," credibility, and initial categories, in addition to, continual reflecting on the data; and

3. classifying and interpreting the data into codes, "the heart of qualitative data analysis," from which themes were generated (Creswell, 2013, p. 184).

Data analysis for the identified qualitative approach followed the sequence of phases mentioned above; however, as the sequence of phases occurred, the stages were often interconnected and simultaneous.

Phase 1: Organize the data for analysis. The first phase involved the review and organization of collected data. Numerous sources of archival data were examined for the purpose of obtaining information to determine responses to the research questions posed within the study. These sources included:

- The Moreland Commission on Utility Storm Preparation and Response

- State of New York Public Service Commission

- Public statements and memoranda from the office of the Governor of New York

- Archives of the New York State Senate

- Archives of the US Congress

- Position paper of the Utilities Workers Union of America

- Testimony from the Consolidated Edison Company of New York, Inc., Shared Services Panel-Electric, and

- Other relevant white papers, reports, and articles obtained through electronic databases.

In addition to the review of archival information, three interviews were conducted and a review and organization of the transcript data was performed to interpret themes presented in the materials.

Phase 2: Conducting a scan of the data. The second phase of the process involved conducting a scan of the data for creditability, organizing major ideas, and developing the initial categories of the themes. In addition, this phase included the continual reflection of the data, analytical questioning, and writing of memos.

While several sources of archival data were reviewed, four specific sources were selected because of their relevance to the research questions. The selected sources were:

(a) State of New York Public Service Commission (2009)

(b) The Moreland Commission on Utility Storm Preparation and Response Final Report (2013)

(c) The Impact of Hurricane Sandy on Consolidated Edison of New York: Assessment of Restoration Efforts and Recommendations for the Future Position Paper of the Utilities Workers Union of America (2012); and

(d) Consolidated Edison Company of New York, Inc., Shared Services Panel-Electric Testimony (2012).

Transcripts of interview data were reflected upon and scanned for organizing major ideas, recurring messages, and initial categories.

Phase 3: Classifying and interpreting data into categories. The third phase comprised coding the data. The coding process involved analyzing the primarily textual data and assigning codes to segments of the data. The codes were based on the research questions, and applied to both archival data and interviews. Other aspects of the data analysis included reflection notes, review of the literature about Con Edison's performance during Hurricane Sandy, as well as suggested best practices.

Definitions of each theme is highlighted in Table 4.1.

Table 4.1

Definition of Themes (Kaplan & Norton, 2004)

Identified Themes	Definitions
Knowledge Management	The management of the company's most valuable knowledge and knowledge-related assets to increase performance and value to customers.
Knowledge Acquisition/Knowledge Transfer	The continuous acquisition and transfer of valuable information/knowledge that creates value for employees, customers, and the organization.
Service Quality and Customer Restoration	The delivery of quality service to customers during the Hurricane Sandy restoration efforts.
Operations Management	The development and management of efficient processes, procedures, technologies, and equipment required to improve organizational performance, reduce costs, and add value to customers.
Processes/Procedures	The preserving of a knowledgeable and engaged workforce to maximize value to the organization and to customers.
Technology/Equipment	The senior Con Edison workers and managers (pre-retirees) with valuable knowledge and experience gained throughout their work history of more than 25 years.
Workforce Retention The Aging Population Skills and Training	The skills and training required to increase organizational performance and service quality to the customers

Participant Profile

Names of the interviewees have been modified for the purpose of maintaining confidentiality.

The first interviewee, Patricia, indicated that she had been employed by the company for more than 25 years at one of Con Edison's New York City locations. Patricia revealed that she was present in one of Con Edison's New York City control rooms during Hurricane Sandy.

Steven was the second interviewee, and he said that he had been employed with the company for more than 25 years in one of the New York City locations. Steven was also present in one of Con Edison's New York City control rooms during Hurricane Sandy.

When interviewed, Arthur had been employed in Con Edison's Field Services for the past 10 years.

Each participant was informed of the purpose of the study, and a review of the informed consent was provided to ensure that participants were aware of their rights and the ability to terminate the interviews at any time. In addition, participants were assured that information provided during the interviews would remain confidential in that identifying information would not be shared.

Interview questions were guided by the following research questions posed by the study.

1. What were the knowledge management practices utilized by Consolidated Edison during the Hurricane Sandy crisis?

2. Considering the weaknesses identified in the knowledge management practices, what knowledge management best practices might benefit Consolidated Edison customers?

3. What processes or procedures might facilitate the transformation from poor knowledge management practices to best knowledge management practices?

Research Question 1: What were the knowledge management practices utilized by Consolidated Edison during the Hurricane Sandy crisis?

The analysis of archival data and interview statements disclosed a concentration of gaps in poor knowledge management practices, particularly knowledge acquisition and knowledge transfer. Hence, these two knowledge management practice areas weaved a pattern throughout the themes and subthemes.

Themes and Subthemes Developed

Once the coding was completed, further analysis led to the creation of four themes and eight subthemes, which were identified. Each theme and subtheme is discussed in the following sections.

Theme 1: Knowledge management, the organization, and the customer. Analysis of the data revealed Con Edison's practices for the management of knowledge. Evidence of gaps in knowledge management were present in a review of the archival data and interviews and interpreted to be significant contributors to the company's response to customers during Hurricane Sandy. The following statement exemplified Con Edison's practice through the perception of Arthur, a Con Edison troubleshooter in Field Services. He stated that:

Contractors were hired by the company to supplement Con Edison's

workforce during the storm. Their function was to respond to the area, find

the problem, and correct the problem. The contractors were delayed in

performing their job because they had no direct communication with the

control center. To obtain access to the control center, and to

acquire/transfer information, the contractor had to locate their foreman,

the foreman had to locate the general contractor, and then, the general

contractor had to contact the control center to acquire/transfer the

necessary information. The information was critical to the delivery of

immediate service to customers during this emergency. (p. 9)

This was one of several sources that indicated considerable uncaptured

information or knowledge that was critical to resolving the situation. Ideally, uncaptured

internal and externally originated information should have been communicated

immediately to facilitate quick decision making. That did not always happen. The critical

information was required to sustain human life, homes, and institutions, including elder

care facilities. The breakdown of the knowledge management transfer process was

detrimental to customers and stakeholders who had no optional communication link to

the company.

Subtheme: Knowledge acquisition. Analysis of the data disclosed gaps in Con

Edison's practices for capturing knowledge to transfer the right information to the

appropriate people at the right time. The data acquired and aggregated from customers

was critical for the company's timely response to customers during Hurricane Sandy.

Arthur was asked about the knowledge acquisition practices at the company. He acknowledged that a gap existed in acquiring information from customers. Arthur recalled that during the Hurricane Sandy storm:

Customers contacted Con Edison primarily through telephone calls, which were linked to the company's voice automation system. Unfortunately, the system malfunctioned due to an overwhelming volume of calls and the bulk of incoming customer information never reached the field for troubleshooting.

Thus, the information/knowledge required for the company's quick decision making and emergency response was inadequate as a result of the malfunction of the knowledge acquisition process. The inadequacy was detrimental to customers seeking to provide critical information about the storm. The insufficiency caused customer outrage, as social media communication was negligible. Consequently, the inability of the customers to provide critical information about their circumstances, lead to serious ramifications for Con Edison. For example, while restoration of services was underway, the customer was dependent on Con Edison for acquiring knowledge related to restoration time and safety issues. Patricia reflected on Con Edison's gap in acquiring customer information as she recalled that during Hurricane Sandy, the company lacked a dedicated line to receive emails from customers.

Subtheme: Knowledge transfer. Analysis of the data also revealed gaps in Con Edison's practices for transferring knowledge by transferring the right information to the appropriate people at the right time. The information and data transferred within Con Edison to customers was vital to the company's timely response during Hurricane Sandy.

Upon reflection, Arthur acknowledged that a gap existed in transferring customer information. As mentioned above under the knowledge acquisition theme, Arthur affirmed that Con Edison experienced a malfunction within the voice automation system due to the overwhelming call volume. Consequently, the transfer of critical information required for call center processing, and subsequent field service troubleshooting, was deficient.

The analysis of the data also revealed gaps in the company's practices related to knowledge transfer from pre-retirees to junior workers. The concern related to the "graying" at Con Edison, a shortage of workers in the mid-range experience levels, which was reflected in a statement from the *Assessment of Restoration Efforts and Recommendations for the Future, Position Paper of the Utilities Workers Union of America* (2013).

Arthur shared a similar perspective, as he reflected on the occasions when junior workers came up against a difficult job that was out of the ordinary. A discussion among the senior workers occurred and knowledge was shared in small groups, but it was not transferred throughout the entire organization. This may have resulted in additional delays in response.

Theme 2: Service quality and customer restoration. Analysis of the findings within the study revealed inadequate practices at Con Edison concerning service quality to customers during restoration efforts. Severe gaps in customer service quality were evident in the Moreland Report (Moreland Commission, 2013).

Findings revealed that over 900,000 customers in Con Edison's service territory suffered electric outages at the peak of Hurricane Sandy ("Sandy"). The Commission's

investigation of Con Edison uncovered numerous problems with its performance during Sandy. Specifically, the report indicated that Con Edison's inadequacies prolonged the duration that customers were out of power (Moreland Commission, 2013).

That report also concluded "customers increasingly rely on Con Edison's website outage maps for outage information, the insufficient service confused customers during the restoration period" (Moreland Commission, 2013, p.48).

The Moreland Report (2013) also noted that gaps existed in localized estimated restoration times (ETRs), which should have been "timely, accurate estimates for when power will be restored to service areas . . . estimates which were essential for customers to plan for outage periods at that time" (Moreland Commission, 2013, p.47).

Con Edison's service reliability was also of concern to the Utility Workers Union of America as noted in a review of their report. It stated that "in restoring service post-Sandy, Con Edison resorted to patchwork and temporary repair arrangements that it cannot now revisit and correct, further weakening the system" (UWUA, 2013, p. 2).

Theme 3: Operations management and the impact on the customer. Analysis of the data disclosed Con Edison's practices for the management of operations during routine and emergency occurrences. The gaps in operations management substantially contributed to the company's poor response to the customer. The Moreland Report (The Report) suggested "inefficiencies, disorganization, and lack of planning," when it revealed that "despite reported recommendations from the Public Service Commission, Con Edison has consistently failed to improve certain areas of their electric operations" (Moreland Commission, 2013, p. 47).

Subtheme: Processes and procedures. The analysis of data revealed gaps in Con Edison's processes and procedures, which affected the company's response to customers. Con Edison's processes and procedures were outlined in *Documents for Corporate Procedures* (http://www.coned.com), hereinafter known as "DOCs." The documents provided directives for routine and emergency occurrences in every area and function of the company. The Moreland Report noted processing and procedures gaps when it stated that:

> Con Edison's emergency plans lacked formalized processes for dealing
>
> with the restoration of homes and businesses that were shut off due to
>
> severe flooding. The lack of flood restoration processes and planning was
>
> a significant problem experienced during Hurricane Irene, Tropical Storm
>
> Lee, and Hurricane Sandy, causing customer confusion and unnecessary
>
> delays in restoration. (Moreland Commission, 2013, p. 47)

The Report also suggested that the company's emergency plans lacked formalized processes for restoration efforts. In fact, the report indicated that Con Edison's processing gap for home and business restoration was unresolved for an extended period of time. Prior to Hurricane Sandy, the company experienced Tropical Storm Lee and Hurricane Irene. Ample time existed to rectify the processing gap, which would have significantly benefitted customers. That did not happen. When Arthur was asked about which practices, processes, or procedures were lacking and of detriment to customers during Hurricane Sandy, he responded that from an electrical perspective, preventative maintenance practices would have been of great benefit to customers. The practices and procedures would have included guidelines specifying who was working, who was

operating the system, and there would have been preparation for the known and unknown.

Subtheme: technology. Analysis of the data revealed gaps in Con Edison's Information Technology practices that impacted the company's customer response during Hurricane Sandy. Several technology gaps were disclosed and underscored in the Moreland Report that focused on technology weaknesses during Hurricane Sandy. The report stated:

Con Edison's website outage maps suffered glitches and malfunctioned during Hurricane Sandy. The outage map and technology failures were tied to failures in computerized outage management systems, which in many cases, failed to keep up with increased user volume during emergency conditions. (Moreland Commission, 2013, p. 48)

The Moreland Report also provided perspective on the timeliness of customer restoration by stating, "Con Edison struggled to develop accurate and timely ETRs [Estimated Restoration Times] during Hurricane Sandy, as technical problems forced Con Edison to use paper forms to transmit information" (Moreland Commission, 2013, p. 57).

Further, the need for damage assessment data prior to restoration was conveyed in the Moreland Report, which stated:

Con Edison did not leverage the use of technology in its damage assessment process . . . damage assessors [did] not have a way of communicating their assessment in real-time to the planning and engineering divisions . . . damage assessors aggregate their data and submit it to the command center at the end of

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each shift . . . [this manual practice] . . . slowed the ETR development process

down and delayed the damage assessment process. (Moreland Commission, 2013,

p. 63)

Additional technology inadequacies were evidenced in Con Edison's Outage

Management System (OMS). "The system was previously untested prior to the storm and

. . . the volume of outages being reported, forced CE to take the system offline for 1.5

hours to install a software update" (Moreland Commission, 2013, p. 52).

Interviewees queried as to what technology inadequacy was detrimental to the

customer, responded that the voice-automation system customers relied on to report

outages and/or emergencies malfunctioned due to overwhelming call volume during

Hurricane Sandy. Customers were dependent upon malfunctioning technological voice

system and customer service during the storm.

This researcher's analysis of the data findings indicated that customers were

significantly impacted by Con Edison's insufficient damage assessment process that was

dependent on real-time technology for accurate prediction of estimated restoration time.

The technology inadequacy caused customers tremendous inconvenience because they

received inaccurate information related to restoration of their service.

Subtheme: equipment. Analysis of the data disclosed inadequate equipment as a

substantial gap related to Con Edison's operations and response to customers during

Hurricane Sandy. The Moreland Report noted the equipment gap including the

ramification of risks to the customer. It stated:

Con Edison lacked sufficient resources necessary to address the issues. Con

Edison did not have enough new or refurbished meters to re-establish service to . .

. customer equipment [and] it became a scramble to maintain a steady supply of

meters to re-energize customers. In addition, Con Edison lacked sufficient

quantities of . . . safer green adapter plates, which presented an unnecessary risk

to customers. (Moreland Commission, 2013, p. 59)

Arthur shared that from his perspective, the equipment gap focused primarily on

the electrical grid. He reported that:

There has to be innovative ways to make the system [the electrical grid]

more reliable. The system is over 100 years old. It requires constant

maintenance so, if the systems issues don't get fixed today, the problems

grow . . . a week, a month, six months, a year goes by, and the problems

become greater not smaller, and in an emergency, if pressure is brought to

bear on the system, then that's when it erupts. (Arthur, June, 2014)

In addition, UWUA shared their insight on the equipment gap and stated, "Con

Ed has adopted an unacceptable "run it until it breaks" mentality, in which ongoing

maintenance has been replaced by emergency repairs, which are conducted only when

equipment fails" (UWUA, 2013, p. 4)

Furthermore, the UWUA acknowledged Con Edison's reluctance to perform

"routine equipment inspections, cable replacements, and pole replacements, which were

critical for system reliability and safety to customers" (UWUA, 2013, p. 5).

Theme 4: workforce retention. Analysis of the data revealed gaps in Con

Edison's practices for the management of workforce retention. Human resource strategy

and practices focused on four priorities, one of which was retention. The company's

practice for addressing retention was by offering compensation and benefits that were competitive within the marketplace.

There was evidence of gaps in workforce retention in the data that were significant contributors to Con Edison's response to customers during Hurricane Sandy. A current Con Edison workforce employee and interviewee reported that "if one of our best mechanics decides to relocate within the company, the unit suffers a loss because the knowledge base and expertise are no longer available" (Arthur, June, 2014). The UWUA also addressed the workforce gap:

> The demographics of the Con Ed workforce show a substantial number of
> relatively younger and relatively older employees, with relatively few in the mid-
> range experience levels . . . as older employees retire, taking with them their vast
> institutional knowledge, there may not be sufficient replacements to fill the gap.
> This subject needs to be examined. (Utility Workers Union of America, 2013, p.
> 18)

Subtheme: the aging population. The severity of Hurricane Sandy underscored utility, industry-wide issues with aging human capital. The Center for Energy Workforce Development conducted a survey that pointed to an increase in the quantity of employees with more than 28 years of service since 2006 (IBEW, 2005). While designed for the industry, the survey directly addressed the issue with Con Edison's "graying" workforce. The Moreland Commission was also concerned about the impact of "graying" on the retention of the workforce. The report stated:

> The aging of the workforce is problematic during storm response because
> human resources, just like physical plants, are less resilient and more

vulnerable during high stress conditions mandatory overtime in the form

of multiple 16-hour days under the worst of physical circumstances was

taking its toll and threatening the storm response. (Moreland Commission,

2013, p. 54)

The significance of the aging population gap was also of concern to the

International Brotherhood of Electrical Workers (IBEW) as exemplified in their statistic:

"50% of the utility workforce will be eligible for retirement within the next five years

[approximately to 2011]" (IBEW, 2005). The industry-wide statistic directed attention to

Con Edison's pool of experienced workers at the time of the storm. Notwithstanding the

age factor and physical strain during storm conditions, the company's pre-retirees

represent an accumulation of knowledge assets that provide significant value to the

company; furthermore, the asset was essential for sufficient response to customers during

Hurricane Sandy.

Subtheme: workforce staffing. Another issue that emerged was Con Edison's

Human Resource practices related to assessing staffing requirements. The following

statement summarized the practice:

HR works closely with the Con Edison operating departments to determine

staffing levels . . . required to meet operational needs. Based on these needs,

Human Resources is responsible for recruiting . . . and hiring . . . new employees.

(Con Edison Electric Report, 2012, p. 96)

The gap in Con Edison's workforce staffing is underscored by the UWUA, which

outlined the shortfall by stating:

Con Edison needs to increase its full-time, in-house personnel staffing. There is

simply too much work and too many issues for too few workers. Con Edison

should be required to hire at the baseline staffing level and to fill promptly any

vacancies that may occur from time-to-time. Con Edison was in a weakened

condition prior to the arrival of Super Storm Sandy. The condition is the result of

the [c]ompany being significantly understaffed. (UWUA, 2013, p. 4)

The reduced workforce significantly affected Con Edison's response to customers

during Hurricane Sandy. The UWUA reaffirmed the customer impact by stating, "the

reduced workforce means that [during] the months leading up to the storm, important

maintenance and related activities were either being ignored or performed on a reduced

basis" (UWUA, 2013, p. 4).

The gap in Con Edison's workforce staffing has been diminished through the use

of contractors, particularly during Hurricane Sandy. While the practice was intended to

serve as a temporary solution to the staffing inadequacy, the results of this study call

attention to the impact of short-term solutions on the company and the customers served.

The UWUA addressed the issue as follows:

We are uncertain whether contractors are adequately trained. Our experience is

that the work and safety standards employed by contract labor are not equal to

those utilized by the company's full-time, in-house workforce. In our experience,

it is not unusual for our members to be asked to correct inadequate work

conducted by Con Edison contractors. (UWUA, 2013, p. 17)

Furthermore, the long-term effect of using contractors on the company and its

customers was a concern of the UWUA. The sentiment was conveyed by the following

statement: "Contractors owe no allegiance to the company or its customers. Con Ed should be seeking a workforce that wants to be there for the long-term, and to grow and develop over the years" (UWUA, 2013, p. 17).

The views of the UWUA may be somewhat biased, because it is in their interest for Con Edison to hire union members for full-time jobs instead of using contractors. However, the data collected in this study suggested the UWUA position has some merit and that a skilled workforce familiar with the company and the system, and with strong job-related skills, was essential for Con Edison's delivery of high-quality service to its customers.

Subtheme: skills and training. Analysis of the data provided evidence and underscored the shortage of essential job-related skills and training required to service customers during Hurricane Sandy. The company stated, "HR works closely with the operating departments to determine the skills required to meet operational needs. Based on these needs, HR is responsible for training new and existing employees" (Con Edison Electric Report, 2012, p. 96). The practice was designed for union and management employees. The newly hired union workers, that is, Customer Service Representatives (CSRs), Customer Field Representatives (CFRs), and General Utility Workers (GUNs), received five to 10 days of preliminary training, depending on the job function.

However, CSRs had extensive preliminary training that extended over a nine-week period, and additional training continued via on-the-job training, online training, seminars, and additional classes. Newly hired management members were trained in leadership skills and technical development. Growth Opportunity through Leadership Development (GOLD) was Con Edison's leadership development and training program

that also provided succession planning for the company. The GOLD program expansion was scheduled for June 2014 (Con Edison Electric Report, 2012).

The majority of training was conducted at the company's training and education facility, hereinafter referred to as "TLC," which boasts of training more than 25,000 employees in more than 600 courses (Con Edison Electric Report, 2012). Despite the company's training efforts, Con Edison's response to Hurricane Sandy was significantly compromised by the apparent lack of appropriate skills and training of employees.

Arthur reported that, "During Hurricane Sandy, some of the workers were fresh out of school, somewhat trained, but many were not sufficiently trained. They were not prepared to take on the responsibilities and challenges [required] to respond to an emergency." This statement, from the perspective of a current Con Edison troubleshooter in Field Services, underscored the lack of adequate training and the impact on Con Edison's response to customers.

The Public Service Commission (PSC) observed the shortfall in 2009 at which time they reprimanded Con Edison stating, "Con Ed must bring greater skills in the arena it performs" (PSC, 2009, p. 7). The skills and training gap was reaffirmed by Patricia, a former Con Edison manager, employed during Hurricane Sandy. She reported that customer service was short staffed and, therefore, people from other departments were trained on the spot; however, the training required time.

The implication of Patricia's statement is that the time spent training workers on the spot was time taken away from servicing customers during the emergency. The company's skills and training deficit delayed the customer response time during Hurricane Sandy.

Furthermore, the Moreland Report stated that many utilities conduct refresher courses in the days prior to storm predictions.

> The "refreshers" alleviate inaccuracies during the storm event. For example, the damage-assessing department of Con Edison "undergo[es] four hour event[s] to better understand the overhead electric system . . . the course is divided into 2 hours of classroom and 2 hours of CE Learning Center where there [are] physical examples of poles, equipment, and other electrical equipment. (Moreland Commission, 2013, p. 50)

It is unclear whether Con Edison provided storm training for its workforce prior to Hurricane Sandy. While out-of-state contractors became part of the company's workforce during the storm, they were unfamiliar with safety standards and the layout of Con Edison's electrical system. Thus, the insufficiency of skills training, together with inadequate attention to safety standards, was of detriment to customers during Hurricane Sandy.

Research Question 2: Considering the weaknesses identified in knowledge management practices, what knowledge management best practices might benefit Consolidated Edison customers?

For the purpose of this research study, best practices were characterized through an analysis of knowledge gathered about the behavior and practices of successful knowledge management companies (Davenport & Probst, 2002).

Considering Con Edison's shortfalls in knowledge management, best practices were analyzed from other companies that were recognized as leaders in the knowledge management domain. The successful practices of knowledge management were

correlated with Con Edison's gaps and highlighted in Table 4.1. IBM, the Ritz-Carlton Hotel Company, General Electric Company, and AT&T were analyzed for knowledge management best practices. The summary of the findings are presented in Table 4.2, which represents Con Edison's gaps and the best practices from the aforementioned exemplary knowledge management companies.

The International Business Machines Corporation (IBM) successfully utilized social media to acquire and transfer knowledge while simultaneously engaging with and enhancing relationships with customers. Through their Social Customer Relationship Management, IBM followed its customers in a virtual community-based environment, where knowledge was acquired, transferred, and exchanged, unreservedly, via networks such as IBM.com Communities, IBM Podcasts, Twitter, Facebook, LinkedIn, YouTube, and unlimited blogs. The social media channels enhanced customer interaction and communication that provided a medium for responding to customer queries, advertised IBM events, acquired customer ideas and feedback, shared employee experiences and practices, trained employees and customers, and facilitated customer-to-customer exchanges (Heller & Parasnis, 2014).

Table 4.2

Detailed Description of CE Gaps and Best Practices of Knowledge Management

Companies

Gap	Best Practices
Knowledge Management	International Business Machines Corporation --The successful practice in knowledge acquisition and knowledge transfer, also known as Social Customer Relationship Management, utilized social media communities of engaged customers and colleagues to acquire/transfer information that benefitted the organization and customer.
Service Quality	Ritz-Carlton – The Ritz-Carlton exceeds expectations in service quality and was the recipient of the Malcolm Baldrige National Quality Award. The company culture, embedded in the organizational values stated in the Credo, Motto, Three-Steps of Service, mandated exemplary employee behavior standards for customer service delivery. Employee customer service training was continuous and rigorous, which benefitted the delivery of world-class service to customers.
Operations	General Electric Company – GE was renowned for excellence in operations management, process improvement, and service delivery to customers. GE's well-respected three-day workout practice improved cooperative problem solving through examination and recommendation of process improvements, which upon acceptance, were enacted within the organization.
Workforce Retention/Recruitment	AT&T – The AT&T best-in-class practice for workforce succession planning, acknowledged by the LEARNING ELITE, was exemplified through the well-respected mentoring program that pairs selected junior members with highly experienced senior members. AT&T provided the medium for exchange through face-to-face interactions and technology designed to capture, transfer, and store, the information/knowledge gained and shared.

The Ritz-Carlton Hotel Company (Ritz-Carlton) was recognized as the Malcolm

Baldrige National Quality Awardee for consistently exceeding customer expectations.

The company culture and unwavering values were key success factors that directed

excellent employee behavior. Employees were empowered while acquiring continuous

and rigorous training in excellent customer service delivery. Regardless of positionality within the organization, employees were expected to deliver world-class customer service with zero tolerance for non-conforming behavior. Despite the rigorous training and zero tolerance for nonconformity, the Ritz-Carlton valued employees and extended them trust, which was essential for encouraging risk-taking and innovation for the benefit of the customer (Michelli, 2008).

General Electric Company (GE) was equated with excellence in operations management and service delivery to customers. The corporation acknowledged that in service environments, performance and customer satisfaction were dependent on the management of operations and investment in technology systems. Furthermore, great operations required great investments in people for process improvement and efficient utilization of technology that rapidly responded to customers (Ton, 2014).

GE's best practice included three-day workouts that improved organizational performance and operations efficiency through cooperative problem solving. The process typically involved the selection of employees and managers from various organizational levels who were divided into teams that deliberated about possible solutions to an assigned operational issue. Proposals were developed and offered by the team and, if accepted by management, then enacted within the organization (Ulrich, Kerr, & Ashkenas, 2002)

AT&T's best-in-class practice for workforce succession was praised by the LEARNING ELITE, which recognized best companies in learning and development. AT&T realized the link between a talented and dedicated workforce and the organization's on-going success. The highly recognized mentoring program paired

selected management trainees and/or high-performing employees with senior members with a work history of more than 20 years. AT&T provided the media, both face-to-face and via technology, for capturing, transferring, and storing, the knowledge gained by senior level managers and executives throughout their career. AT&T's history of commitment to this practice earned the organization the distinction as best-in-class for workforce succession planning (L. Hudson, personal communication, July 10, 2014).

Research Question 3: What processes or procedures might facilitate the transformation from poor knowledge management practices to best knowledge management practices?

The Balanced Scorecard, as outlined in Chapter 3, was a tool created by Kaplan and Norton (2004) to provide a knowledge management framework for a set of recommended changes designed to add value to the company and the customer. In this study, the Balanced Scorecard mapped the solution for Con Edison's transformation from poor knowledge management practices to best knowledge management practices. Table 4.3 represents a proposed strategy map that Con Edison could use to chart a new direction toward a customer-centric organization. How this tool might be deployed at Con Edison is presented in the implications section of Chapter 5.

Table 4.3

The Proposed Con Edison Balanced Scorecard (Adapted from Kaplan and Norton, 2004)

Financial Perspective	Maintain distribution and transmission systems	Maintain gas/steam generation facilities	Add Customer Operations Instructors to Learning Center staff	Hardening of electrical system	Improve technology systems
Customer Perspective	Ensure price is equivalent to service value	Upgrade Call Center operations	Acquisition and storage of customer information	Restore service in a timely manner	Deliver quality service
Internal Perspective	**Knowledge Acquisition** Establish and maintain social media channels and informal networks to capture customer information, feedback, ideas, and suggestions; train employees and customers	**Knowledge Transfer** Establish and maintain social media channels and informal networks to transfer organizational information, employee and customer experiences, ideas, and practices	**CRM** Establish Customer Service representative protocol for appropriate behavior and attitude; provide timely and relevant information of delivery of quality service to customer	**Bridging Gaps** Leadership builds a bridge: hire and retain knowledgeable and experienced workforce; commit to continuous training; refocus on teamwork by encouraging risk taking and cooperative problem solving; reexamine and upgrade internal and external processes, procedures, practices, performance evaluations, and policies.	
Learning and Growth Perspective	**Human Capital** Develop human capital assets through valuing tacit knowledge and transferring via on-the-job training; align workforce with new customer-focused strategies to improve customer satisfaction; improve succession planning for graying workforce; train workforce in use of updated technology; enhance workforce skill to improve performance and productivity		**Information Capital** Develop technology infrastructure designed to improve customer service delivery; upgrade technology to improve operational performance; solicit and value employee and customer feedback as essential to redefine service quality practices, procedures, and processes, which will reduce cost and response time.	**Organization Capital** Leadership is required to create customer-centric culture to enhance service quality and customer satisfaction; managers empowered to innovate, exercise risk taking to solve problems without retribution; organization exploits internal and external best practices; transfers and uses practices throughout the company	

Summary of Results

The findings of this qualitative case study were analyzed for knowledge management practice gaps in Con Edison's performance during Hurricane Sandy. The themes for this analysis emerged from an analysis of archival data and interviews with three of the company's retired and current administrators. The study demonstrated how information/knowledge was ineffectively managed during Hurricane Sandy. Knowledge acquisition and knowledge transfer were two knowledge management practices scrutinized for their impact on service delivery to customers. While best practices were drawn from successful knowledge management companies, the Balanced Scorecard strategy charted how Con Edison might transform from poor knowledge management practices to best practices.

Chapter 4 reported on the findings of the study as related to the research questions posed within this study. Chapter 5 summarizes the research, reiterates the findings, reviews both the implications and limitations, and offers recommendation for future research connected with the problem identified in Chapter 1.

Chapter 5: Discussion

Introduction

The purpose of this qualitative research case study was to:

1. identify the organizational practices used by the Consolidated Edison
   Company of New York during the Hurricane Sandy disaster,

2. compare Con Edison's practices to the best practices of exemplary companies,
   and

3. use the information obtained to propose a pathway from current knowledge
   management practices to exemplary practices.

Thus, the intent of this chapter is to provide implications of the findings, discuss

limitations, and offer recommendations. The overview of the research findings and

implications are discussed through the framework of the balanced scorecard strategy

(Kaplan & Norton, 2004), which presents Con Edison's gap areas for improvement,

knowledge management strategies to create value to customers, and a new trajectory for

the company.

Implications and Recommendations Based on Findings

In this case study, the research analyses resulted in the proposed Con Edison

Balanced Scorecard, which is the framework that charts the action plan for the company's

new trajectory. The Balanced Scorecard Strategic Action Plan summarizes how Con

Edison can create sustained value for the organization and its customers. The proposed

Con Edison Balanced Scorecard, introduced in Chapter 4 (Table 4.3), is also represented in Chapter 5 (Table 5.1).

Con Edison's Proposed Balance Scorecard is based on knowledge management strategies to create value to customers. The Scorecard identifies Con Edison's knowledge management key processes that drive success and align their strategic customer-focused goals with strategies that benefit the organization and customer (Atkinson, 2006). The Con Edison Balanced Scorecard uses four distinct perspectives, which include:

1. financial,

2. customer,

3. internal, and

4. learning and growth.

These perspectives attain balance and function similar to a concert symphony, as each perspective plays a melody, the melodies/perspectives depend on each other, and they harmoniously create music to an audience who seeks value for their ticket price.

Financial perspective. The Con Edison Financial Perspective identifies tangible gaps that require financing to achieve the customer-focused strategic goals. The first two gaps acknowledge maintenance of both transmission and distribution wires and gas/steam facilities. Evidence was supported by the Utility Workers Union of America (2013*)* and an interviewee that the aging of the 100 year-old grid was partly responsible for Con Edison's inability to meet the demands of customers during the storm. Con Edison, the central power source for New York City and lower Westchester County, is vulnerable to unstable weather patterns. Thus, preventative maintenance is required to preserve its facilities.

The third gap delineates the need for additional, qualified Customer Operations Instructors for the Learning Center. Evidence from interviewees, Patricia and Arthur (former and current Con Edison employees), as well as the Public Service Commission (2009), underscored the inadequate training of current employees by qualified instructors. Employees were often incapable of translating classroom instruction into field operations, which was ultimately detrimental to customer restoration. Essential job-related skills and training was required to provide better service quality to customers during the storm.

The fourth gap draws attention to hardening of the electrical system, the process of fortifying the grid for flexibility, and responsiveness to severe weather conditions. As evidenced in the Assessment Report of the UWUA (2013), Con Edison's electrical system lacked the ability to isolate customers with flooded equipment during the storm. Well-functioning switches were required to de-energize customers with flooded equipment while, simultaneously, maintaining electrical services to other customers.

The fifth and concluding gap in the financial perspective pinpoints the purchasing of improved technological systems to deliver quicker and more efficient service delivery to customers during emergencies. Evidence was provided from the Moreland Commission (2013) and one interviewee that the website outage maps and call center voice-automation systems malfunctioned due to increased user volume. Both technological systems were imperative to Con Edison's acquisition and transfer of information and service delivery to customers.

Further, Con Edison's budget and accounting systems require integration with the four Balance Scorecard Perspectives, and the organizational structure, technology, and business context, in order to be effective (Otley & Berry, 1980).

Table 5.1

Proposed Con Edison Balanced Scorecard (Adapted from Kaplan and Norton 2004)

Financial Perspective	Maintain distribution and transmission systems	Maintain gas/steam generation facilities	Add Customer Operations Instructors to Learning Center staff	Hardening of electrical system	Improve technology systems
Customer Perspective	Ensure price is equivalent to service value	Upgrade Call Center operations	Acquire and store customer information	Restore service in a timely manner	Deliver quality service
Internal Perspective	**Knowledge Acquisition** Establish and maintain social media channels and informal networks to capture customer information, feedback, ideas, and suggestions; train employees and customers	**Knowledge Transfer** Establish and maintain social media channels and informal networks to transfer organizational information, employee and customer experiences, ideas, and practices	**CRM** Establish Customer Service representative protocol for appropriate behavior and attitude; provide timely and relevant information of delivery of quality service to customer	**Bridging Gaps** Leadership builds a bridge: hire and retain knowledgeable and experienced workforce; commit to continuous training; refocus on teamwork by encouraging risk taking and cooperative problem solving; reexamine and upgrade internal and external processes, procedures, practices, performance evaluations, and policies.	
Learning and Growth Perspective	**Human Capital** Develop human capital assets through valuing tacit knowledge and transferring via on-the-job training; align workforce with new customer-focused strategies to improve customer satisfaction; improve succession planning for graying workforce; train workforce in use of updated technology; enhance workforce skill to improve performance and productivity		**Information Capital** Develop technology infrastructure designed to improve customer service delivery; upgrade technology to improve operational performance; solicit and value employee and customer feedback as essential to redefine service quality practices, procedures, and processes, which will reduce cost and response time.	**Organization Capital** Leadership is required to create customer-centric culture to enhance service quality and customer satisfaction; managers empowered to innovate, exercise risk taking to solve problems without retribution; organization exploits internal and external best practices; transfers and uses practices throughout the company	

Customer perspective. The company's Customer Perspective outlines Con

Edison's value response to customers, delineates what customers seek, and allows

managers to identify priority customers (Gulati, 2013). The company's value response to

customers include:

1. pricing that is equal to customer service value,

2. upgrading of call center operations,

3. acquisition and storage of customer information,

4. timely restoration of service, and

5. delivery of quality service.

Con Edison's first gap area, concerning customer service, introduces the concept

of price in relationship to value. During Hurricane Sandy and subsequent restoration

efforts, Con Edison's neglect of both proactive repairs and update to its gas, electric, and

steam services, caused customer distress. These gaps were evidenced in the Moreland

Commission (2013), which led New York State Governor Cuomo to remind Con Edison

that the company was accountable for their performance and service quality to customers.

As a consequence, when Con Edison filed for a rate hike, they were denied by the

Governor of the State of New York (http://www.governor.ny.gov/press/10082013-reject-

con-edison-proposal). The proposed Balanced Scorecard solution to eliminate the gap is

to ensure that prices charged are equivalently to service value, which is dependent on

customer's perceived service and the actual service received (Parasuraman, Zeithaml, &

Berry, 1985).

The company's second gap area, concerning customer service, addresses the

organization's call center. During Hurricane Sandy, Con Edison's voice automation,

damage assessment, and outage management systems malfunctioned due to overwhelming user volume. The system was taken offline for almost two hours, much to the chagrin of customers, as evidenced in the Moreland Commission (2013). The proposed Balanced Scorecard solution to bridge the gap requires installation of updated software that facilitates a rapid response time to customer demands.

The third customer service gap area acknowledges the acquisition and storage of customer information. During Hurricane Sandy, customer information was lost due to the voice automation system malfunction. Thus, important customer information, including active records of communication, was not acquired or stored for further evaluation, recommendation, and edification, about customer's needs and trends. The proposed Balanced Scorecard solution is an enhancement of Con Edison's technology and skilled employees trained to manage customer information.

The fourth gap area, concerning customer service, pinpoints the timely restoration of services. During storm, the timeliness of customer restoration was a significant gap in customer service as evidenced in the Moreland Commission (2013). Con Edison struggled to estimate accurate restoration times because technical issues forced manual dissemination of information for rapid decision making. The proposed Balanced Scorecard solution requires an enhancement in technology to better estimate restoration time for customers.

The final gap area, concerning customer's perspectives, draws attention to the delivery of quality service. During storm restoration, service quality surfaced as a significant gap in Con Edison's performance toward the customer, as evidenced in all of the archival data sources and interviewee reports. As evidenced in the review of literature

(Parasuraman et al., 1985), customers rated the quality of service as poor or exemplary based on how well the company exceeded the customers' expectations. The proposed Balanced Scorecard bridges the customer service quality gaps by satisfying and exceeding customer expectations, enhancement of communication between Con Edison and its customers, reduction of damage assessment time for speedy restoration, reduction of outage duration, and reduction of restoration costs, reducing the customer burden associated with rate hikes.

Internal perspective. Con Edison's Internal Perspective directs attention to important knowledge management processes that are connected with the day-to-day operations that deliver service to customers (Gulati, 2013). Con Edison's critical knowledge management processes include Knowledge Acquisition, Knowledge Transfer, and Customer Relationship Management (CRM).

During Con Edison's Hurricane Sandy restoration efforts, the organization struggled to acquire and transfer information for rapid decision making and electric, gas, and steam service to customers. The company's gap in knowledge acquisition/transfer was a significant hindrance to customers as evidenced in the Moreland Commission (2013). The report elaborates the insufficiency in a permanent workforce due to the union strike that occurred prior to the storm. Consequently, outside contractors were hired to supplement the reduction in Con Edison's experienced labor force. Unfortunately, the limited number of outside contractors were unprepared and untrained to perform work in affected urban locations, which emphasized the gap in knowledge acquisition/transfer of information from Con Edison's experienced workers to outside contractors. Unfortunately, this action occurred during the time allotted for customer emergency

repairs and restoration; the inadequacy caused additional delays in the delivery of customer service.

The knowledge management significant process area gaps draw attention to what is required of Con Edison to deliver value to customers. The knowledge management process areas provide goals to achieve the proposed Con Edison Balanced Scorecard Strategy outcome. The goals include establish/maintain social media channels and informal networks to acquire/transfer customer and organizational information and feedback; train employees and customers, and transfer employee experiences and practices; and establish a Customer Service Representative protocol for behavior and provision of relevant information for customer service delivery.

During Hurricane Sandy, Con Edison was deficient in their pool of Customer Operations Instructors (COIs) and Customer Service Representatives (CSRs). Con Edison's customers who were able to connect with live CSRs were frustrated due to the inadequacy of the CSRs responses to customer inquiries, concerns, and demands for timely feedback. During Hurricane Sandy, the CSRs were the customer's initial link with Con Edison. The quality of the company's CSRs' response to customers was determined by the amount of time taken to respond to the customer, the content of the response, and the value of the information offered (Sugandhi, 2003). The proposed Balanced Scorecard solution for Con Edison's significant process area gap in customer relationship management will:

1. establish CSR protocol for appropriate behavior and attitude, and

2. provide timely and relevant information for delivery of quality service to customers.

These actions will narrow the gap in Con Edison's customer relationship management practices and benefit customers, particularly during crisis.

Learning and growth perspective. The company's Learning and Growth Perspective is the final perspective, and it is fundamental to the proposed Con Edison Balanced Scorecard. The frame identifies the skills and infrastructure required to sustain Con Edison's knowledge management processes and the behavior required to interact with customers (Kaplan & Norton, 2004). Further, the learning and growth perspective pinpoints the intangible assets that are fundamental to the organization's strategy and are classified into three categories: human capital, information capital, and organizational capital. The goal of the learning and growth perspective is to label which jobs and employee competencies (human capital), which information technology systems (information capital), and which climate/culture (organizational capital) are required to support the internal processes that create value (Kaplan & Norton, 2004). Enhancement and strategic alignment of the intangible assets are critical to providing significant value to Con Edison and service quality to its customers.

Human capital. Con Edison's human capital is critical to the proposed Balanced Scorecard, the organization's strategy, and its response to customers. Con Edison's intangible asset, represented as human capital, identifies the employees' competencies that are required to respond to the technological and information gaps as exemplified in the organization's response to customers.

Hurricane Sandy exposed the gap in Con Edison's management of human capital. The organization's lack of skills in the arena that it performs was exposed by the UWUA (2013) who mandated that the company bring greater skills to the arena that it performs.

The shortage in supply of skilled workers was reaffirmed by the interviewee Arthur. He acknowledged that if one of the best workers was reassigned, the knowledge base, and expertise, was no longer available. Further, the skills gap demonstrates the need for succession planning to replenish the supply of skilled workers.

The company's human capital competencies advance through acknowledgement that human capital is an asset, and transfer of tacit knowledge comes through on-the-job training; workforce alignment with a new customer-focused strategy to improve customer satisfaction; workforce succession planning; and workforce training to improve productivity and performance.

The aforementioned actions will provide improved service quality to Con Edison's customers.

Informational capital. The company's Information Capital aligns with the Internal Perspective of the proposed Con Edison Balanced Scorecard, which is based on knowledge management strategies to create customer value. The information capital draws attention to the organization's critical need for an appropriate technology infrastructure for Con Edison's sustainability in customer service delivery (Kaplan & Norton, 2004).

Technology inadequacies were evidenced in Con Edison's inability to rapidly and efficiently acquire and transfer information, as mentioned earlier and evidenced in the information breakdown in the call center, damage assessment, and outage management systems (Moreland Commission, 2013). An interviewee and former Con Edison manager recounted that a disconnection existed between Con Edison's acquisition and transfer of critical information to customers and stakeholders during the emergency. During the

crisis, frustrated customers resorted to contacting external entities, including the borough president's office and other government officials, in the hope of obtaining and transmitting information. The deficiencies in Con Edison's technology pinpoint the need for a suitable technology infrastructure that manages critical information and captures employee and customer feedback from which data can be extracted to redefine processes required for appropriate response to customers.

Con Edison's information capital advances the value added to the organization and customers through developing technology infrastructure designed to improve customer service delivery; upgrading technology to improve operational performance; and soliciting/valuing employee and customer feedback as essential to redefine service quality practices and procedures. These actions reduce Con Edison's costs and response time to its customers and improve the organizations operational performance and execution of rapid response to customers.

Organizational capital. Con Edison's organizational capital balances the alignment of competencies and technologies, as discussed in human and information capitals. The company's organizational capital focuses on the capability to mobilize to sustain the change required to implement the strategy. The foundation of organization capital is built on four components: culture, leadership, alignment, and teamwork (Kaplan & Norton, 2004).

Hurricane Sandy exposed the gap in teamwork, as exemplified in the significant delay in decision making required to restore services to customers. Arthur, an interviewee and field worker, recounted that managers in the field were afraid to solve problems and make decisions for fear of retribution from their superiors. This fear trickled down to the

field workers who were instructed, via Con Edison's six core principles, to work as a team. Arthur explained that a disconnection existed in the theory of the teamwork principle and the actual practice at Con Edison. Further, he explained that contractors were hired during the emergency to respond to the troubled areas, locate, and correct the problems. However, they were provided with no access to the control center to gain information, and no latitude to make immediate decisions to rectify the situation. Contractors resorted to following several stages to obtain communication with the control center. First, they located their foreman, and then the foreman located the general contractor who acquired and transferred the contractor's information and, finally, a decision was received. Con Edison's organizational gaps in adherence to their core principle of teamwork, and valuing and empowering managers to exercise decision making, were of detriment to customers during the emergency. The inadequacies characterized Con Edison's culture as disconnected from its customers, inwardly focused, and in need of best practices to guide the organization to a better future.

Con Edison's Organizational Capital advances through leadership shaping a customer-focused organization, not just in word but in deed; management empowerment to encourage risk taking for problem solving and decision making; leadership fostering an environment conducive to continuous learning, and identification and transfer of best practices throughout the company.

Con Edison bridges the gaps through:

1. the commitment of leadership to shape a customer-focused culture to enhance service quality to customers,

2. hiring and adequately training, and retaining, a knowledgeable workforce,

3. refocusing on the company's core principles, particularly teamwork,

4. valuing and encouraging risk-taking, innovation, and cooperative problem-solving, and

5. re-examining/upgrading internal and external processes and procedures, practices, performance evaluations, and policies.

The primary advantage of Con Edison's proposed Balanced Scorecard is that the strategy map facilitates the transformation from the company's poor knowledge management practices to better practices that provide sustained value to the organization, the customer, and the shareholders. The concept of the Balanced Scorecard to utilize knowledge management strategies to create value to customers is realized through acceptance by the Con Edison leadership.

Crisis-management leadership requires examination of organizational vision, or lack thereof, core values, and strategic positioning, all of which prepare Con Edison's employees with a successful response from the organization to the customer. Failure to plan for and adapt to uncertainties, such as climate change, produces unsuccessful crisis response, loss of revenue, and reputational risk (Kielkowski, 2013). Further, leaders must communicate effectively, because customers derive certain messages from the quality of a response. The leadership response, also known as the information transfer, speaks to the customer about the organization's behavior and the importance the organization attaches to customers (Sugandhi, 2003).

Leadership and crisis management direct attention to reexamination of policy decisions. Leaders make policy decisions expecting outcomes that achieve their organizational objectives. However, leadership misconceptions and faulty assumptions

about the past guide inadequate decision making, and it results in unsuccessful outcomes (Drucker, 1994). The organizational response to the customer is directly affected by the quality of leadership decisions and the existing internal and external policies. Thus, leadership is required to increase value to the organization and customer by developing adaptive policy changes in response to environmental shifts (Janis, 1989).

Limitations

There were two limitations to this qualitative research case study. The first limitation was geographic in nature. The three interviewees and archival research data focused on Con Edison's response to Hurricane Sandy in New York City and lower Westchester County. There might have been aspects of this context that influenced what worked and what did not work. The second limitation related to researcher's bias in the qualitative interpretation of the data. As an independent researcher, I bring certain inherent biases and prejudices to analytical qualitative research situations.

Recommendation For Future Research

Cybersecurity threats to the grid is an area of great concern to researchers and practitioners both nationally and globally. The Governor of the State of New York has established a Cyber Security Advisory Board comprising leading authorities in the field. Further, the State of New York has partnered with the Center for Internet Security, a nationally renowned non-profit entity that assists the government and private enterprises in the preparation and response to cyber-attacks. As technological advancements have exposed the energy industry to cyber threats, it's reliance on the linkage of these entities' critical operating systems, via the Internet and the growth in smart grid technologies, have presented opportunities and challenges.. The opportunity exists at this time to

diligently prepare and strengthen response capabilities while embracing the advancement

of these technologies. The Bipartisan Policy Center, a recognized think tank, has issued a

report entitled, "Cybersecurity and the North American Electric Grid: New Policy

Approaches to Address an Evolving Threat." Con Edison would do well to collaborate

with the newly established entities that are proactively addressing the cybersecurity threat

issue. Additionally, researchers may be interested in examining this relatively new

interest area (Saltzman, 2014). Finally, the methodology used in this dissertation research

is also appropriate for routine use in both identifying weaknesses and developing

approaches to dealing with those weaknesses.

Conclusion

Con Edison's dance of change begins with the steps leading the organization and

workforce to learning and growth. Leadership is charged with creating an environment,

where,

> people continually expand their capacity to create the results they truly desire, . . .
> where new and expansive patterns of thinking are nurtured, where collective
> aspiration is set free, and where people are continually learning to see the whole
> together. (Senge, 1990, p. 3)

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Appendix A

Open-Ended Interview Questions

1. What position did you hold at Consolidated Edison? How many years were you in the position?
2. Describe your role and your experience at the time of the Hurricane Sandy disaster.
3. During the crisis, what do you perceive as the most significant issues related to operations?
4. During the crisis, what do you perceive as the most significant issues related to customer service?
5. How would you assess Con Edison's operational and customer service response?
6. In your opinion, what could have been done differently to achieve the best outcome for operations?
7. In your opinion, what could have been done differently to achieve the best outcome for customers?
8. With regard to deficiencies, what could have been done to resolve customer complaints?
9. In your role and during the storm, what could have better assisted you in performing your job function?
10. During the Hurricane Sandy crisis, can you describe the organizational structure of CE?
11. During the Hurricane Sandy crisis, can you describe the organizational culture of CE?
12. During the Hurricane Sandy crisis, what is your assessment of the communication to customers?
13. What role do you believe social media played in knowledge acquisition and knowledge transfer in relation to operations and customer service?
14. To what extent did social media affect responses and solutions to customer's needs?
15. In the future, what recommendations would you make for employing technology more efficiently?
16. What technology recommendations would you offer to better address/respond to customers?
17. What technology recommendations would you offer for acquisition of customer queries, complaints, and feedback?
18. What were the CE internal practices that you perceived as least effective during the storm?
19. What internal practices/processes were used to maximize customer satisfaction?
20. What do you consider as best practice for customer response during a crisis?