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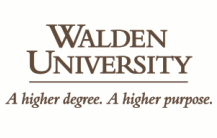

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Exploring the Process of Lean Training in the Healthcare Industry

Rose Bailey
Walden University

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Walden University

College of Management and Technology

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Rose Bailey

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Walden University
2016

Abstract

Exploring the Process of Lean Training in the Healthcare Industry

by

Rose Bailey

MBA, Bethel College, 2009

BS, Bethel College, 2005

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2016

Abstract

Organizational leaders use lean training as a process improvement strategy to eliminate waste and inefficiencies in processes. Of the 91% of company leaders who believed lean training was important, 64% of those leaders expressed the perception that workers do not comprehend lean training and methodology. The purpose of this qualitative single case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. The target population consisted of healthcare managers in a single rural care hospital located in Tennessee who had implemented lean training strategies to train staff in lean principles and lean tools. The conceptual framework for this study was the general systems theory. Data were collected through semistructured interviews with healthcare managers, document review of public hospital data, and public quality reports. Member checking of interview data was used to strengthen the credibility of the findings. Yin's 5-phase qualitative data analysis process was used consisting of compiling the data, disassembling the data, reassembling the data, interpreting the data, and concluding the data. Themes emerged resulting from the use of methodological triangulation of collected data to include improving quality of patient care, teamwork and collaboration, hands-on learning, and training the trainers. The application of the findings may contribute to social change by identifying strategies related to lean training to address inefficiencies, improve quality patient care, and provide a safer healthcare environment.

Exploring the Process of Lean Training in the Healthcare Industry

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Dedication

I dedicate this study to my sons, Marcus and Sydney; sister, Ann; and mother, Pearl. I want to thank each of you for your love, support, patience, and understanding throughout this journey. The care and concern for me throughout this process has been tremendous. Our family has lost two loved ones along this journey – Arrid and John. I know they are with us and watching over us. To a special person, Garland, I want to thank you for encouraging me. Our family has endured and we are strong together. I love you all.

Acknowledgments

I appreciate and give thanks to those that have endured with me as I have traveled toward this ultimate educational goal. Many thanks and gratitude to Dr. Ify Diala-Nettles, Chair, for taking me in and guiding me through this process, Dr. Anne Davis, Second Committee Member, and Dr. Peter Anthony, University Research Reviewer. I give thanks to Dr. Freda Turner, Program Director, for serving as a role model at residencies and supporting me throughout this process.

I urge other doctoral students to find students in your program to talk with throughout this process. The cohort relationship can encourage you, guide you, and motivate you until the end of the journey. I want to thank Amelia Pryce, doctoral student, for being that person for me. I truly believe that the right people at the right time are put in our path to lead, guide, and support us along this journey called life. I am forever grateful.

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Section 1: Foundation of the Study

The terms *lean* or *lean thinking* apply to a reengineering strategy that encompasses principles and practices to improve and manage processes (Nicolay et al., 2012). There are varied definitions of lean, with a common meaning pertaining to the elimination of waste and improvement of efficiency (Thangarajoo & Smith, 2015). Radnor, Holweg, and Waring (2012) described lean as a process improvement strategy leaders adopted to improve operational efficiency in 51% of service companies. Al-Balushi et al. (2014) noted that some healthcare managers use lean as a strategy to address process improvement.

Although some managers are using lean as a business strategy to address process improvement and operational efficiency, they are using this approach on a limited basis (Chassin, 2013; Naik et al., 2012; Nguyen, 2015). Healthcare organizational managers could reduce business costs through efficiencies and process improvement (Holden, Eriksson, Andreasson, Williamsson, & Dellve, 2015; McLaughlin, Buxey, Chaw, & Martin, 2014). Wackerbarth, Strawser-Srinath, and Conigliaro (2015) discussed how the reduction of waste is the focus of lean. Samuel and Novak-Weekley (2014) explained how waste increases health care costs within organizations and reduces profits. Dibia, Dhakal, and Onuh (2014) noted that training to reduce waste is essential to sustain process improvements. Training is the development of employees to improve the knowledge, skills, and attitudes required to complete job tasks (Bertram, Moskaliuk, & Cress, 2013). Without training, employees could make errors in performing roles and job responsibilities for their organizations.

Background of the Problem

Definitions of lean or lean thinking vary, but all encompass the idea of the reduction of waste. The various terms for lean evolved over the years. According to Gao and Low (2014), Ohno developed lean in the 1940s and early 1950s from the Toyota Production System (TPS). In the business environment, the term lean is a business approach that focuses on eliminating waste that could be in the form of delays, errors, and inefficiencies that affect the organization monetarily (de Souza, 2009). Bhat, Gijo, and Jnanesh (2014) implied that there was a connection between lean thinking and the service management industry. Radnor and Osborne (2013) explained the concept of lean as a process within a system to address and implement change.

Using lean in the healthcare environment is an effective business strategy for improving processes (Bhat et al., 2014). Adapting lean in the healthcare arena is in its early stages of development (Al-Balushi et al., 2014). According to de Souza (2009), the first application of lean in the healthcare environment is unclear; the first work published about lean healthcare was in 2001 by the National Health Service Modernisation Agency, which attempted to utilize strategies of lean to address financial issues throughout the organization. In this study, the focus was on the strategies that healthcare managers use to address lean training in a rural care hospital to reduce waste and improve the quality of care to patients.

Problem Statement

The findings of the literature affirm that even though lean training initiatives fail at a high rate (Bhasin, 2012; Goodridge, Westhorp, Rotter, Dobson, & Bath, 2015); 91%

of company leaders believed lean to be important (Bhasin, 2012). Sixty-four percent of those leaders expressed their perceptions that workers do not comprehend lean training and methodology. The general business problem addressed in this study was the inability of healthcare managers to implement effective lean training to address escalating healthcare costs. The specific business problem was that some healthcare managers lack lean training strategies to combat escalating costs.

Purpose Statement

The purpose of this qualitative case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. The target population consisted of healthcare managers in a single, rural care hospital located in Tennessee who have implemented lean training strategies to train staff in lean principles and lean tools. Vaz de Carvalho, Lopes, and Ramos (2014) and Wackerbarth et al. (2015) suggested that training staff was essential to business success and that training methods and tools influence the success of the training program. Wackerbarth et al. (2015) noted that organizational managers use lean principles to improve quality, improve workflow, and reduce costs.

The implications of this study for positive social change included the potential to improve job satisfaction and lower job stress, which can lead to lower turnover and better healthcare within the rural community. Improved job satisfaction and reduced waste in hospitals could lead to lower costs, fewer inefficiencies, improved quality care, and a safer healthcare environment for the citizens in the community. Improvements to healthcare systems lead to better patient outcomes, which can lead to a healthier

population accompanied by the social benefits such as improved work performance and socioeconomic well-being of a healthier workforce.

Nature of the Study

Using a qualitative research method for this study allowed me to explore how healthcare managers adopted lean training strategies to successfully combat escalating costs. When searching for the *why* or *how* an event occurred, the qualitative research method is appropriate (Yin, 2014). I chose the qualitative research method because this method could provide information to address the research question and the in-depth information received from participants could add to the body of knowledge regarding lean.

I rejected the quantitative research method because, according to Harrison (2013), Agerfalk (2013), and Fakis, Hilliam, Stoneley, and Townsend (2014), the quantitative research method involves statistical and numerical data. Watkins (2012) discussed the relationship in quantitative research between known variables and possible use of data in addressing cause and effect, which was not the purpose of this study. Both the quantitative and mixed methods (combined qualitative and quantitative methods) involve data collection and analysis, which was beyond the scope of this study. I rejected both the quantitative and mixed methods approaches as means to explore how healthcare managers successfully adopted lean training strategies, because a qualitative method was more suitable for this study.

The single case study design was appropriate for this study because of the in-depth focus on the context of the research within the boundary of the healthcare industry.

Yin (2014) stated that a case study is appropriate when the *how* and *why* questions are pertinent to the research, boundaries are relevant, and the context is important to the phenomena. The case study design addresses a specific program or event within a specified timeframe and applies appropriately to business settings (Yin, 2014). Langley, Smallman, Tsoukas, and Van de Ven (2013) and Watkins (2012) discussed how the ethnographic design encompasses one group or culture within their specific environment. Exploring the culture of a group was not the focus of this study. Finlay (2013) and Englander (2012) noted that the phenomenological design addresses the meaning and essence of lived experiences, which was not suitable for addressing lean training strategies.

Research Question

The research question that I used to guide this study was: What lean training strategies do healthcare managers use to combat escalating costs? I utilized semistructured telephone interviews to gather information from healthcare managers. The demographic and interview questions outlined below relate to the research question.

Demographic Questions

1. How many years have you been employed as a healthcare manager?
2. How many employees are under your direct supervision?
3. How many total employees are employed in your organization?

Interview Questions

I utilized the interview questions below to gain knowledge about healthcare managers' experiences with lean training:

1. What lean training strategies did you utilize to combat escalating costs?
2. What are your experiences regarding lean training for staff?
3. What are your perceptions related to lean training model(s)?
4. What training characteristics result in successful process improvement?
5. What strategies have you used to train staff in the organization?
6. How would you describe lean process improvement?
7. What is your experience in using lean principles to improve processes?
8. What other information would you like to share?

Conceptual Framework

I used general systems theory as the basis for this study. Von Bertalanffy (1972) developed the general systems theory in the 1930s. The focus of the general systems theory is to address the whole system, including all of its various parts (Novak, 2014). Von Bertalanffy (1950) emphasized that systems are open and evolve through interaction with the environment. Von Bertalanffy discussed how the healthcare environment is a complex, open system with various parts. Different parts of healthcare organizations interact with each other to address continuous change either proactively or reactively (Drack & Schwarz, 2010; Vassell & Nguyen, 2012). Given the inputs and outputs associated with the open healthcare environment, the general systems theory was appropriate for this study. Healthcare managers make decisions that influence patient care, staffing, and general business within the healthcare environment (Cordon, 2013).

Operational Definitions

The following terms were used throughout this study.

A3: Lean tool outlined on 11" x 17" paper and divided into quadrants, used to identify the problem, outline the ideal state, design solutions, and identify cost associated with the change to an ideal state (Vose, Reichard, Pool, Snyder, & Burmeister, 2014).

Gemba: The term refers to the physical place of work with value observations about the product or process (Vose et al., 2014).

Kaizen or rapid improvement event: Young (2014) defined Kaizen as an event that generally lasts 1 week or 5 days of business, used by a team of employees and possibly facilitators to analyze the current process, develop a value stream map, and plan to improve the process.

Lean: Multifaceted concept links principles, practices, and methods to improve and manage business processes by addressing waste, reducing process times, and simplifying business operations (Nicholetti, 2013).

Nonvalue-added work: Work that does not add value to the product or service from the customer perspective is non-value-added work (Novicoff, 2013).

Spaghetti diagram: Visual diagram outlining the path traveled by a product or service through the value stream (Tu et al., 2012).

Standard work: Documentation of structured activities outlining the best way to perform an activity in a safe and efficient manner, leading to high quality and reduced variation that result in the proper outcome (Singh & Singh, 2015).

Value-added work: Work or activity that adds value to the product or service; value-added work is an activity that the consumer visually sees and is willing to buy (Kattman, Corbin, Moore, & Walsh, 2012).

Assumptions, Limitations, and Delimitations

Simon (2011) noted that assumptions are elements that affect the study and are assumed to be true, although there may be no way to prove them. Limitations are aspects of the study outside of the researcher's control that are weaknesses (Brutus, Aguinis, & Wassmer, 2013). Yang and Kenagy (2011) suggested that boundaries are the delimitations in research. In the following subsections, I outline the assumptions, limitations, and delimitations of this study.

Assumptions

According to Simon (2011), assumptions are those elements that are not within the control of the researcher. This study included several assumptions. Given the assurance of confidentiality as outlined in the consent form, it was assumed that participants were honest in answering the interview questions. By adhering to the confidentiality of data received from participants, the responses should be honest in nature. There was an assumption that participants possessed the knowledge to address the research topic. Finally, I assumed the information gained from this study is important to the research process.

Limitations

Two limitations identified in this study include the geographic location of participants and sample size. To reduce the limitation of different geographic locations of participants, I conducted semistructured telephone interviews. Face-to-face interviews might have proven more valuable than telephone interviews because I would have been able to view facial expressions or nonverbal communication of the participants in a face-

to-face setting. Face-to-face interviews were not possible due to geographic limitations. The sample size of a minimum of eight healthcare managers represented all healthcare managers in Tennessee, but cannot represent a larger population.

Delimitations

Welch (2014) described delimitations as the guidelines that provide the bounds of the study. Addressing the delimitations or exclusions of the study narrows the range of the study. The delimitations of this study included three areas: (a) the environment in which the problem existed, (b) the geographic location of participants, and (c) the target population. In this study, I narrowed the scope by addressing training opportunities within the healthcare environment. The environmental focus of this study was a rural care hospital, excluding clinics and nursing homes from this research project. The geographic location was Tennessee. Healthcare managers within a rural care hospital were the members of the population of the study. The sample of the population possessed specific knowledge of process improvement within the rural hospital setting.

Significance of the Study

This qualitative case study could provide information for healthcare managers to address lean training strategies to combat escalating costs. Poksinska (2010) noted the pressure on healthcare leadership to improve the organizational financial condition of the healthcare environment. While providing a quality healthcare experience, healthcare leaders must be efficient and cost effective (Poksinska, 2010). Poksinska defined lean healthcare as a strategy to simplify processes, add value, and eliminate waste.

Contribution to Business Practice

Healthcare cost expenditures in 2011 were approximately 18% of the gross domestic product (Caughey & Burchfield, 2014). Kaplan and Witkowski (2014) discussed how inefficiencies exist in the healthcare industry that increase healthcare costs. The results of this study could have a business effect by revealing, from the perspective of healthcare managers, how lean training could affect the outcome of organizational projects initiated to decrease waste and improve processes. Once trained in lean thinking principles, healthcare staff could affect business practices positively through the lean approach to problem solving. Poksinska (2010) noted that lean thinking is threefold in nature, consisting of philosophy, the culture of management or leadership of the organization, and tools used to reduce waste and improve workflow within the system. Hlubocky, Brummond, and Clark (2013) and Poksinska, Swartling, and Drotz (2013) agreed that the main goal of lean thinking is to eliminate waste. Eliminating waste from the process could positively impact business practices.

Implications for Social Change

The implications for positive social change included strategies in training healthcare workers to improve processes that could lead to continuous improvement strategies such as lean. Utilization of the training to offset inefficiencies can improve healthcare processes. Managers within healthcare organizations could deploy specific lean training to increase the probability of employees utilizing this strategy. By addressing inefficiencies, there should be improved quality care and a safer healthcare environment for patients (Lavoie-Tremblay et al., 2012). The implication for positive

social change is the impact on patient care. Patient care quality suffers from inefficient processes. If a healthcare team addresses inefficiencies, the results could be improved quality patient care and improved patient safety.

A Review of the Professional and Academic Literature

The focus of this doctoral study was to explore strategies adopted by healthcare managers to implement process improvement projects and train staff to increase the probability of successful implementation. The literature review component of the study comprises a synthesis and evaluation of existing literature derived from journals, books, seminal works, and doctoral studies. The focal point of the literature review related to the central research question that guided this study.

In addition to themes, the literature review encompasses a comparison and contrast of information related to general systems theory, alternative theories, the evolution of quality management, continuous process improvement, training techniques, methodologies for problem solving, waste associated with lean, lean tools, and lean training. The background of systems theory outlined in this section provided the conceptual framework for the study.

In the historical sections of the articles, I reviewed the continuous quality movement and how it evolved over time into total quality management. In the articles reviewed, the pioneers of the total quality movement addressed the evolution of total quality management and how quality control circles evolved into the problem solving methodologies. As the Toyota Production System (TPS) emerged from the quality movement, lean evolved into the business strategy to eliminate waste. To develop

employees, training emerged as a key factor to enhance employees' skills. Other substantive topics of the literature review section included problem-solving strategies, challenges of lean, barriers to implementation, the definition of waste, types of waste, and lean tools.

In an effort to locate literature on the topic, I adopted the strategy to research keywords associated with lean. The literature included specific keywords associated with the specific business problem that some healthcare managers lack lean training strategies. Common keywords associated with lean thinking I utilized in the word search include: *lean*, *lean thinking*, *lean training*, *lean tools*, *continuous quality improvement*, *training models*, *problem solving methodologies*, *waste*, *Total Quality Management*, *Joseph Juran*, and *Dr. Edwards Deming*. Additionally, I concentrated on the specific industry of *health care* or *healthcare* in the search.

I retrieved journal articles, dissertations, books, and other reference sources from the electronic library at Walden University and Google Scholar. Databases accessed through the collection of literature included both business and health-related databases. Within the Walden University electronic library, I used databases including: Emerald Management Journals, Health Sciences, Science Direct, SAGE Publications, MEDLINE, EBSCOhost, CINAHL Plus with Full Text, ABI/INFORM Complete, ProQuest, ProQuest Thesis, and Dissertations.

The review of the literature included the examination of research derived from peer-reviewed, scholarly periodicals and seminal works including books. Of the 286 sources in this document, 261 sources (91% of the references) have publication dates

within the 5 years of my anticipated graduation date. Of the 286 sources, 254 are peer-reviewed references (89% of the sources in this document). There are 152 sources in the literature review section, and approximately 88% of those sources were peer-reviewed and published within 5 years of my anticipated graduation date.

General Systems Theory

During and following World War II, society and technology began to grow and challenges arose concerning traditional management methodologies (Von Bertalanffy, 1972). Von Bertalanffy (1972), a biologist, constructed the general systems theory in conjunction with other researchers such as Boulding (1956) and Parsons (1956). The general systems theory was a collective venture through the efforts of different disciplines (Von Bertalanffy, 1972) to address challenges and rapid growth in society and technology.

Von Bertalanffy (1972) suggested that organizations are systems that can be either simple or complex. Drack and Schwarz (2010) discussed the idea that general systems theory interdependently links systems with larger systems. Von Bertalanffy characterized educational institutions and other entities as systems. Suter et al. (2013) reported that general systems theory addresses complex, interdependent systems such as organizations, schools, or hospitals. General systems theory explains the interrelation or linkage between entities (Shang & Wu, 2013). I used the general systems theory as the theoretical basis for this study to address processes within the healthcare setting.

Burris (2013) and Wilson (2012) utilized the general systems theory to support their research. Burris used general systems theory in a quantitative study to address

whether or not healthcare leaders perceived systems theory and organizational learning as factors in strategic effectiveness. The setting of Burris's study was the healthcare environment of a rural hospital. The understanding of the basic principles of systems theory and the relationship to organizational learning were the key elements in the study (Burris, 2013).

Wilson (2012) researched how organizational leaders used enterprise resource planning to address postimplementation. The process of implementing enterprise resource planning is complex and requires the interaction of both information technology and business aspects of the organization (Zhou, Xiao, Liu, & Ai, 2013). Wilson selected the general systems theory for the study to introduce a successful postimplementation of an enterprise resource-planning project. This study could assist in addressing the general systems theory to bridge the relationship of the business research and processes within the healthcare environment.

Alternative Theories

I discuss three theories in this study that are related, opposing, or alternative theories to general systems theory. The high reliability organization theory relates to general systems theory, as it involves complex open systems in high risk environments. The chaos theory and the normal accident theories serve as the opposing theories. Both chaos and normal accident theory oppose the view of order and logical processes.

High reliability organization theory. The high reliability organization theory emerged in 1987, when researchers sought to understand why high-risk organizations ranked low in failure or errors (Chassin & Loeb, 2013). The researchers who developed

the high reliability theory described it as a process or the status of the organization. Chassin and Loeb (2013) and Boin and van Eeten (2013) discussed how organizations strive to be reliability-seeking organizations. The theory emerged from high-risk organizations such as nuclear power and air travel companies, which manage processes that could result in disaster (Chassin & Loeb, 2013). Considering that hospitals are high-risk organizations, the healthcare industry also strives for high reliability for patient safety. The healthcare industry must manage the safety of patients through quality checks that could result in death or harm to the patient (Walraven, McAlister, Bakal, Hawken, & Donze, 2015).

Industrial leaders adopted the high reliability organization theory to address complex systems. The healthcare delivery system is a complex system (Kalra, Kalra, & Baniak, 2013; Padula, Duffy, Yilmaz, & Mishra, 2014). Casler (2013) and O'Neil and Kriz (2013) noted that there were other industries that have successfully implemented the high reliability organization theory. These include aviation, military, and public safety industries. According to Chassin and Loeb (2013), the high reliability theory is increasing in acceptance within the healthcare industry.

Within the healthcare industry, errors can happen that could affect one or more patients (Dickson & Flynn, 2012). There is a great potential for human error within the healthcare environment; therefore, there is a need to improve patient safety within the healthcare environment (Chowdhury & Habib, 2015). Patient safety should be a foundational principle or goal of any healthcare organization. Checklists are an organizational tool that reduce risk and mitigate errors in processes (Thomassen,

Storesund, Softeland, & Brattebo, 2014). Downey, Hernandez-Boussard, Banka, and Morton (2012) noted patient safety indicators as predictors to prevent errors or events within the healthcare environment. Downey et al. suggested training as a way of improving workflow to reduce errors within the healthcare environment.

Padgett (2014) used the high reliability organization theory to explore the perceptions and experiences of healthcare staff affected by the transition to an organization striving to achieve the status of a high reliability organization. Sheridan-Leos (2014) noted that the Institute of Medicine report prompted interest in the healthcare arena to adopt the high reliability organization theory. The findings from Institute of Medicine report indicated that patient safety was associated with training and communication. In the study, Padgett collected three types of data, including interviews, documents, and group observation. In the research, themes emerged that indicated key areas affecting patient safety: education, training, and communication. The data derived from the study could assist business leaders in improving training and education and improving staff morale.

Chaos theory. An opposing theory to both the high reliability organization theory and general systems theory is the chaos theory. Chaos theory has a linkage to the social sciences, but it was Lorenz, a meteorologist, who articulated the theory (Raisio & Lundstrom, 2014). The chaos theory is complex and encompasses the idea that order that cannot be predetermined (Raisio & Lundstrom, 2014). According to Ven, Ganco, and Hinings (2013), chaos theory pertains to the relationship between organizational growth, complexity, instability, and unpredictability. Chang, Wen, Chang, and Huang (2014)

claimed that the study of a chaotic business system could lead to insights about leadership strategies to produce positive outcomes amidst chaos. Depicting chaos theory can be difficult because the theory is complex and order cannot be predetermined. When considering healthcare, processes must work as a system and there must be a sense of order to different processes to meet safety and accountability standards (Lukewich et al., 2015).

Normal accident theory. Perrow discussed how some accidents are not avoidable. The basis of the normal accident theory is the concept of unavoidability (Hopkins, 2014). The Joint Commission and Centers for Medicare and Medicaid (Centers for Medicare and Medicaid [CMS], 2013) set policies and standards that the healthcare industry must adhere or lose federal funding. The healthcare industry is regulated by governmental agencies to protect patients. Within complex systems such as healthcare, training on patient safety is of the utmost importance (Lukewich et al., 2015). As noted by Lukewich et al. (2015), without training and regulations of the healthcare industry, healthcare practitioners make mistakes and accidents happen. Although the premise of normal accident theory is that some accidents are unavoidable, patient safety is an expectation in the healthcare environment (Chowdhury & Habib, 2015). If healthcare staff receive training to reduce inefficiencies, mistakes are less likely to happen (Aebersold & Tschannen, 2013).

History of Quality Movement

Emiliani and Emiliani (2013) discussed process improvement in the manufacturing industry and early pioneers who embarked on the process improvement

journey. Taylor and Gilbreth instituted studies to improve quality and efficiency (Emiliani & Emiliani, 2013). Taylor investigated how the combination of productivity and efficiency resulted in improved quality (Watson, 2012). Total quality management grew into lean thinking.

Noor, Kasolang, and Hj (2012) noted that Deming was the founder of total quality management. Paraschivescu (2014) credited Deming and Juran with the development of data analysis tools and management philosophies including total quality management. Among the process improvement tools and strategies, Deming developed the Plan-Do-Check-Act problem solving cycle as another continuous improvement strategy (Womack & Jones, 1996). The focus of plan-do-check-act is to develop, implement, review, and sustain strategies to correct a problem or defect in a process.

Matzka, Di Mascolo, and Furmans (2012) discussed the development of the TPS after World War II, involving the mass production of different types of products in small quantities. The premise behind TPS, according to Matzka et al., was to eliminate waste in mass production of products. Even though the TPS system involves several elements, the main element is the kanban, a pull system versus a push system (Matzka et al., 2012). A kanban system helps to identify what stage the work is in throughout the entire process (Bassuk & Washington, 2014). A strategy workers use to identify abnormalities in the process is a standard procedure; as workers identify an abnormality within the process, workers take action to correct the abnormality (Matzka et al., 2012).

Japanese manufacturers implemented management philosophies such as Total Quality Management (TQM) that originated from postwar work by Deming and Juran to improve processes in the manufacturing industry (Besseris, 2014). Teich and Faddoul (2013) highlighted the fact that Toyota pioneered lean thinking and reinvented the Toyota Motor Company in 1929, formally incorporating the company in 1937. Ohno joined Toyota Motor Company in 1943 and noted two flaws in production systems located in the Western world, which were batching and customizing the term lean production originated because of the gap between Toyota performance and the performance of other car manufacturers (Teich & Faddoul, 2013).

Quality Leaders

As a frontline leader in a telecommunications company, Crosby emphasized doing the right thing the first time, costing the organization less money (Zairi, 2013). Defects in quality would cost the organization money, representing forms of waste (Crosby, 1979). Crosby (1979) focused on six areas of quality including: (a) developing standards of quality, (b) while doing the job, (c) do it right the first time, (d) addressing quality not as a problem, (e) measuring performance by cost, and (f) achieving zero defects in the process or service. Crosby (1984) believed that management should assess maturity within the quality environment and introduce a plan for quality improvement.

The quality management philosophy proposed by Crosby (1984) included fourteen steps. Crosby's steps start with management commitment, a quality improvement team, quality measurements, quality awareness, and evaluating the costs of quality. Corrective action and establishing ad hoc committees for the program leads to

supervisor training (Crosby, 1984). Other steps Crosby cited included establishing zero defects day, goal setting, error cause removals, recognition, and the use of quality councils. A feedback process that includes a repetitive assessment and corrective plans follows, establishing cycles of quality improvement (Crosby, 1984).

Hellstrom, Lifvergren, Gustavsson, and Gremyr (2015) noted the System of Profound Knowledge consisted of the interconnected system, variation, knowledge theory, and psychology. Organizational leaders utilized these four elements to introduce change management (Hellstrom et al., 2015). Deming noted four points related to healthcare change were leadership, fear of the unknown, internal barriers, and transformation (Zairi, 2013). Watson (2012) noted that during the early 1980s, emphasis of the quality focus was on continual improvement and change.

Juran and Deming highlighted the business crisis in the United States that surfaced from poor quality products and services (Zairi, 2013). To make improvements to quality, management and staff became engaged in training, using established standards and the structured approach addressing quality control, quality improvement, and quality planning (Zairi, 2013). The fundamental difference of the approaches between Deming and Juran was that Deming focused on the cultural aspect of the organization while Juran focused on quality within the organization (Paraschivescu, 2014).

Womack and Jones (1996), as industrial analysts, worked with firms to improve performance using the lean production approach. Lean production is a concept that developed from the TPS (Ciarniene & Vienazindiene, 2012). To sustain growth and success within the business environment, Jones and Womack defined value from a

customer perspective and claimed waste elimination could improve productivity and stabilize the internal environment.

Total Quality Management

Nicholas (2014) remarked that total quality management evolved from total quality control. Leaders using the management principle of total quality management acknowledge cost reductions and pursue quality and efficiency (Lari & Asllani, 2013). A link emerged between financial performance and poor quality (Watson, 2012). Total quality management addressed both management methods and economic theory (Sadikoglu & Olcay, 2014).

After the introduction of quality, there was a delay discovering the benefits of lean. Nicholas (2014) discussed how total quality management philosophies originated in Japan during the 1960s and became clear during the 1980s and 1990s. Organizational improvement was the focus of total quality management (Sadikoglu & Olcay, 2014; Siew Yong, Luen, & Chye, 2014). Some of the tools associated with total quality management are quality control tools, management tools, and the improvement cycle of plan, do, study, act (Millar, 2013).

Total quality management evolved into a modern management foundational philosophy (Zairi, 2013). By improving processes, organizational managers could reduce costs associated with providing supplies, equipment, and resources (Lari & Asllani, 2013). Ideally, organizational managers monitor performance after process improvement strategies to assess the effectiveness and sustain improvement (Gogan, Baxter, Boss, & Chircu, 2013).

In addition to total quality management, Pimentel and Barrueto (2015) discussed statistical quality controls. Quality leaders use the statistical quality control method to identify variability in the process or the development of a product (Huang, 2015). By using the statistical quality control method, quality leaders lessen the variability in the process or development of the product (Pimentel & Barrueto, 2015).

Quality control circles, originally used in Japan, address quality improvements in healthcare (Jin & Doolen, 2014). According to Jin and Doolen (2014), training was an area in the industrial sector that utilized quality control circles. In the mid-1980s, quality control circles became popular in the American healthcare sector (Jin & Doolen, 2014). The focus of quality control circles is on the anticipated need for the patients as well as the personal experiences of the team members involved in the quality control circle method of improvement (Sandeepsoni, Kumar, Duhan, & Duhan, 2015).

Healthcare Reform

Healthcare reform became law in 2010, with the passing of the Patient Protection and Affordable Care Act (ACA) (Sonfield & Pollack, 2013). Sonfield and Pollack (2013) discussed the goal of this legislation to provide universal healthcare coverage for U.S. citizens through instituting three initiatives. The three initiatives were to increase insurance coverage to Americans, control costs associated with healthcare, and use prevention measures to improve healthcare (Sonfield & Pollack, 2013).

Wald and Patel (2012) noted healthcare reform expanded coverage to both the insured and the uninsured populations in America. With the increased population coverage, there is an increased cost (Pritchard & Potter, 2011). The cost associated with

the new healthcare reform laws that could cover the insured and the uninsured in America is at the forefront of discussions by government officials, business owners, and U.S. citizens (Pritchard & Potter, 2011). Considering the increased cost of covering both the insured and uninsured, healthcare reform is a concern for many Americans (Zezza & Nacinovich, 2015).

Shaffer (2013) discussed controlling costs associated with the ACA. Using a pay for performance reimbursement system as set forth in the new healthcare reform laws, could influence the rising cost of healthcare in America (Pulcini, 2014). Healthcare managers and healthcare staff aspire to provide safe, quality care to patients (Chowdhury & Habib, 2015). Healthcare executives strive to address challenges associated with patient safety, quality, inefficiencies, and financial burdens resulting from decreased payer reimbursement and high costs associated with healthcare for the insured and uninsured (Mosadeghrad, 2013). The healthcare system is an open system complicated by multiple processes. Organizational leaders use strategies to address process improvement (Naik et al., 2012).

Need for Training

In transforming an organization from the traditional process improvement strategies to a lean organization, there will be challenges or obstacles (Brown, 2013). Kinder and Burgoyne (2013) noted there is a high failure rate of lean production implementation within organizations. Brown (2013) discussed the barriers of resources in training employees. Bhasin (2013) noted that some failures stem from organizational management problems and cultural limitations.

People are an essential asset to any organization (Martin, Kolomitro, & Lam, 2014). To implement an organizational transformation, the leaders and frontline staff need training in new process improvement initiatives (Jehanzeb & Bashir, 2013). Brown (2013) discussed that one of the contributing factors to change initiatives was communicating the initiatives to stakeholders. Organizational leaders adopted and recognized the value in moving from the traditional organization model to a learning organization model (Otto, 2012). Enhancing the intellectual facet of the organization through its employees continues to be a barrier in many organizations (Brown, 2013).

Learning can have an impact on the performance of the organization, motivational aspect of employees, and job connection (Jehanzeb & Bashir, 2013). Martin et al. (2014) discussed the impact of activities associated with the learning transfer philosophy to address training. Martin et al. highlighted the benefits to organizations that stem from employee peer support, learning motivation, support from management, and mentoring of employees in the workplace. Employee alignment relates to the readiness to learn and strategic goals of the organization to institute the instructional learning model (Martin et al., 2014).

Alignment of learning goals with organizational objectives and with the tools and applications to support the learning is imperative for the success of the instructional learning model (Otto, 2012). Brown (2013) noted that tools alone did not deliver the expectation of process effectiveness and efficiency that management required from the training model. Other factors influence the success of training such as resources, funding,

time, organizational culture, and executive commitment that combine to enhance a training program of high quality (Jehanzeb & Bashir, 2013).

Regarding knowledge and learning in healthcare settings, relative to improvement strategies Edmond, Brown, Gray, and Taylor (2013) claimed that a knowledge disconnection can inhibit the flow of essential knowledge, ideas, and creativity, leading to missed opportunities and frustrations. Optimal learning and training can improve communication and knowledge necessary to reduce waste (Edmond et al., 2013). Andersen, Røvik, and Ingebrigtsen (2014) claimed that lean strategies are most effective when capable leadership provides effective training with involved healthcare workers and the use of team processes. Mazzocato, Savage, Brommels, Aronsson, and Thor (2010) claimed that lean intervention successes stemmed from understanding processes, generating a shared understanding, organizing learning for effectiveness and efficiency, and collaborating to systematically solve problems to enhance knowledge leading to continual improvements.

Training Techniques

Organizational managers address ways to cut costs, including costs associated with the training of employees. Management teams are assessing the most cost efficient and effective way to address education within the organization (Jehanzeb & Bashir, 2013). Some managers are pursuing classroom-based training, simulation training, and online or e-learning to address the need to educate employees to use critical thinking and problem-solving skills (Aebersold & Tschannen, 2013; Srivastava & Agarwal, 2013).

Classroom training is the most common type of training, although organizations increased the ways they train employees (Aebersold & Tschannen, 2013; Min, Magnini, & Singal, 2013; Srivastava & Agarwal, 2013). Hospital staff members involved in classroom training indicate enhanced learning (Rabol et al., 2012). The classroom training includes specific interventions, such as lectures, demonstrations, role-play, and discussions (Rabol et al., 2012).

Within the healthcare environment, healthcare workers learn manual skills to care for patients and perform job related duties (Aebersold & Tschannen, 2013). However, the online or e-learning field has become widespread (Srivastava & Agarwal, 2013). Learning can be asynchronous or synchronous in the online environment (Giesbers, Rienties, Tempelaar, & Gijselaers, 2014). Employees of many organizations are benefitting from utilizing online or the e-learning applications to enhance knowledge and skills (Srivastava & Agarwal, 2013).

Healthcare workers also train by using simulator training (Johannesson, Silen, Kvist, & Hult, 2013). Vyas, Bray, and Wilson (2013) noted educators using the simulation method replicate a particular technique through simulations that are interactive in nature. Simulation training is the training method normally used in the medical setting (Aebersold & Tschannen, 2013). To identify training challenges, realistic simulations mirror the healthcare environment (Aebersold & Tschannen, 2013). Simulation training can provide real experiences that address the challenge in a safe environment (McGaghie, Issenberg, Barsuk, & Wayne, 2014).

Prior to the actual simulation activity in the healthcare setting, several planning stages occur (Argani, Eichelberger, Derring, & Satin, 2012). Planning involves determining how simulation training can lead to the reduction of errors; providing a safe environment in which to operate and learn helps healthcare workers feel free to address unsafe situations (Argani et al., 2012). Management utilizes simulation training to develop technical, clinical, and communication skills (Vyas et al., 2013). Utilizing the simulator training, healthcare workers enhance their cognitive and motor learning skills (Aebersold & Tschannen, 2013). Healthcare managers use simulation training to reduce variation and increase reliability in healthcare practices (Moore, Sublett, & Leahy, 2016). Schmidt, Goldhaber-Fiebert, Ho, and McDonald (2013) noted that simulator training has progressed over time and enhanced accuracy of medical practices and the safety of healthcare delivery.

Methodologies and Strategies for Problem Solving

Problem solving can involve different tools applied to particular problems (Wolf, 2015). The individual addressing the problem determines the specific problem solving method to address the specific problem (Lowell, 2015). Some of the different approaches to problem solving are scientific method, plan-do-study-act, six sigma, lean, and statistical quality control (Furterer, 2011; Knapp, 2015; Pimentel & Barrueto, 2015; Pleasant, 2014). Pleasant (2014) noted that the scientific method originated during the 17th century as a systematic procedure of observing, measuring, and developing hypotheses (Pleasant, 2014). The plan-do-study-act cycle is a quality tool to develop, test, and implement changes to make improvements (Perry, Bell, Shaw, Fitzpatrick, &

Sampson, 2014). Groups or teams can discuss various questions about change goals and improvements (Abdallah, 2014).

Problem-solving strategies evolved from the scientific method and cycles such as plan-do-study-act to strategies such as sigma six to reduce variation in processes (Amato-Vealy, Fountain, & Coppola, 2012; Gijo, Antony, Kumar, McAdam, & Hernandez, 2014). The six sigma process includes frontline staff in the identification of the problem and the implementation phase of the change to address the problem (Amato-Vealy et al., 2012). According to Knapp (2015), six sigma is a management style to address quality improvement within the organizational environment. The six sigma methodology focuses on the reduction of variation in the process by measuring defects which improve the product or service produced by the organization (Chassin, Mayer, & Nethery, 2015).

The six sigma focuses on the improvement of quality, the reduction of variation in the process, and the elimination of waste (Furterer, 2011). Total quality management grew out of statistical process control and added the process improvement methodology to the philosophy (Sadikoglu & Olcay, 2014). During the 1980s, total quality management, and business process reengineering emerged as the dominant train of thought concerning process improvement in the manufacturing arena (Furterer, 2011). Furterer (2011) discussed how total quality management that was less structured and business process reengineering evolved into what we know today as six sigma.

The six sigma acronym DMAIC stands for Define, Measure, Analyze, Improve, and Control, representing the different stages with tools that can vary depending upon the process (Arafeh, 2015; Furterer, 2011). The Define stage involves outlining the scope of

the project, developing the project charter, communicating the project plan, and developing ground rules occur (Arafeh, 2015). The Measure phase is the identification of the root causes concerning the process (Furterer, 2011). According to Furterer (2011), in the Analyze phase, team members analyze the different types of data consisting of possible cause and effect diagrams, histograms, statistics, sampling, failure mode and effect analysis, gap analysis, hypothesis testing, and other types of data. The Improve phase consists of recommendations, plans for improvement, cost and benefits analysis, future state of the process, experiments, dashboards, production boards, scorecards, or other future state trending tools (Arafeh, 2015). The Control phase describes how sustainability will occur and serves to control the impact of monitoring the process (Furterer, 2011).

Lean

Lean is a popular continuous improvement strategy (Halkoahol, Itkonenl, Vannienen, & Reijula, 2014). Graban (2009) and Raja et al. (2014) defined lean as a continuous improvement approach to reduce waste, address inefficiencies, and improve processes. Toyota Motor Company made the approach of lean popular as a waste reduction and process improvement strategy implemented by businesses (Ouma, Njeru, & Dennis, 2014; Shang & Pheng, 2014). Womack and Jones (1996) maintained that using lean concepts enhances the elimination of non-value-added waste. The lean thinking approach has momentum in the healthcare industry.

Kattman et al. (2012) described value-added work as an activity that the customer views as valuable and worthy of payment. Customers do not feel that inefficiencies or

non-value-added work such as additional motion to complete the task, time searching for tools to complete the task, or time searching for data to complete the task is worthy of payment (Kattman et al., 2012). Raschke and Sen (2013) defined non-value-added activities as actions that do not add value to improve the outcome of the product, service, or process. Raschke and Sen noted that non-value-added activities do not produce a return on investment. The goal is to address each activity and classify whether the activity is non-value-added or value added (Kattman et al., 2012). Organizational managers can evaluate non-value-added activities based on whether they improve the process or add waste to the process (Raschke & Sen, 2013). If the decision is a non-value-added activity, there is a possibility to eliminate or reduce the activity (Kattman et al., 2012).

Lean is a multifaceted management strategy that creates value by eliminating waste (Graban, 2009). Industries, regardless of the origin, have waste (Arafeh, 2015). Lean thinking identifies various categories of waste as: overproduction, defects, not clear (confusion), waiting, transporting, inventory, excess processing, motion, and underutilizing staff (Teich & Faddoul, 2013). Graban (2009) discussed waste in terms of the acronym DOWNTIME (defects, overproduction, waiting, not utilizing staff talent, travel, inventory, motion, excess processing). Teich and Faddoul (2013) included human potential or underutilization of staff as an added type of waste.

Bassuk and Washington (2013) defined a defect as a product or service that needs rework or repair. Within the healthcare environment, a defect is incomplete or missing information (Raja, Davis, Bales, & Afsarmanesh, 2014). Healthcare is an area where

equipment must be in good working order (Bassuk & Washington, 2013). Equipment repaired within a timely manner is crucial in providing safe care to patients (Raja et al., 2014).

There should not be excess production of products or services. Organizations should determine the proper amount needed within a specific timeframe (Bassuk & Washington, 2013). Raja et al. (2014) discussed the idea of not wasting or having idle time involving people, information, equipment, or materials that are not at hand to perform the work. Edmond et al. (2013) also noted excess time and delays in healthcare settings as waste. Spending less time acquiring needed supplies, equipment, or providing services is reducing waste (Edmond et al., 2013). Raja et al. noted that efficient flow reduces wait time and helps minimize waste.

Confusion occurs when people performing the tasks are unclear or not confident about the one best way to complete the task (Bassuk & Washington, 2013). According to Raja et al. (2014), confusion, stemming from unnecessary relocation or delivery of patients, materials, or supplies to complete a task, is waste. Concerning the process, movement that does not add value is considered unnecessary and classified as waste (Raja et al., 2014). Edmond et al. (2013) identified this type of waste in healthcare that may involve excess movement relative to inventory, as conveyance or transportation waste.

Other waste includes having more materials on hand than are required to do the work (Graban, 2009). Unnecessary movement of people does not add value to the process and contribute to waste (Bassuk & Washington, 2013). Steps in a process that are

irrelevant to the process and do not add value from the patient perspective is waste because the activities and work are unnecessary and unaligned with the needs of the patient (Graban, 2009).

Employees should be engaged to reduce loss of ideas and supporting staff (Graban, 2009). By engaging and listening to employees, improvements can be brainstormed and possibly save the organization money or build revenue (Bassuk & Washington, 2013). Organizational leaders should consider the development of human potential, skills, and talent of employees (Graban, 2009).

Lean Tools

Kane et al. (2015) discussed several lean tools that Graban (2009) also discussed, such as 5S, A3 problem solving, Gemba walks, observations, and spaghetti diagrams. Additional lean tools include standardized work, and value stream mapping (Kane et al., 2015). As noted below, quality leaders defined these lean tools and emphasized reducing waste by using the tools (Simon & Canacari, 2014).

The applications of the 5S lean tool lead to a well-organized workplace (Graban, 2009). The workplace should have visual controls and order; a 5S lean tool is a structuring technique for control and order (Vaz de Carvalho et al., 2014). There are five subsets to 5S consisting of sort, straighten and set in order, shine, standardize, and sustain (Teich & Faddoul, 2013).

In sorting the workplace environment, quality members remove unnecessary items (Graban, 2009). The straightening aspect of 5S is how quality leaders bring order to the work environment through storage and organizational techniques (Thomas, 2015).

Shining the work area means to clean the work area (Graban, 2009). Standardization improves workflow processes and practices in the work area (Teich & Faddoul, 2013). After quality leaders sort, straighten, shine, and standardize the workspace, the last element is to sustain the improvement (Graban, 2009). Commitment to the new 5S area is never ending, and employees should strive for additional improvements (Thomas, 2015).

Mohd-Saad et al. (2013) discussed A3 thinking and the relationship to the lean production system. Mohd-Saad et al. described A3 thinking as a management tool utilized to address problem-solving and process improvement in a structured tactical strategy. Managers outline A3 thinking on an 11" x 17" piece of paper, also known as A3 paper, with different quadrants on the A3 report form such as the background, current state, and target state (Mohd-Saad et al., 2013). Johnson, Patterson, and O'Connell (2013) noted that A3 report incorporation effectively addresses process improvement in the healthcare industry.

Dombrowski and Mielke (2013) discussed the foundational principle of Gemba in the workplace. Gemba is a Japanese term applied to organizational leaders who observe the workplace to gain knowledge and make decisions based on data and observations (Hossen, 2015). In the development of the product or service, organizational leaders observe the process to identify the root cause of problems or opportunities (Dombrowski & Mielke, 2013). Organizational leaders avoid defects by identifying and addressing problems through the Gemba process (Hossen, 2015).

Critchley (2015) discussed the spaghetti diagram as a tool to document movement of a product or individual. To develop a spaghetti diagram, Tu et al. (2012) wrote that the

observer needs an outline and create a structural diagram of the physical location. The observer outlines and traces the steps that an individual takes or the flow of the process in the development of the spaghetti diagram (Tu et al., 2012). The observer develops the spaghetti diagram to visually identify wasted steps or flow throughout the process, to address opportunities to improve the physical layout of the workplace (Critchley, 2015).

Industry leaders utilize standard work to implement the automation of a particular process (Lu & Yang, 2014). Lu and Yang (2014) noted that organizational managers created the technique of standard work within the TPS. By developing standard work for a particular process, Lu and Yang claimed that managers can duplicate steps used by different members within a work group, leading to the same results for the same work. Organizational managers used consistency to eliminate variation in the process, when one person or another person completes the same process (Lu & Yang, 2014). Critchley (2015) emphasized the importance of reproducible strategies to improve safety in hospital settings.

Kattman et al. (2012) noted value stream mapping as the activity that adds value from the perspective of the consumer. Kane et al. (2015) described value stream mapping as a lean tool used to identify the flow of information or products to customers. Value stream mapping is a visual depiction tool of the current state and future state of a process (Kattman et al., 2012). Leaders identify each step in the process through standardized symbols for mapping processes (Kane et al., 2015).

Organizational Learning

Cross, Ernst, and Pasmore (2013) described leadership as an avenue to influence others to direct or facilitate control or initiate positive organizational change. Organizational leaders impart knowledge and learning through motivating, developing, and training employees to sustain competitiveness (Wolfson, Cavanagh, & Kraiger, 2014). Antony (2015) described training as skills or knowledge that increases organizational knowledge that in turn increases value of the product or service.

The requirements of lean training enhance the scope and add new dimensions to the current organizational structure that goes beyond the typical employee-training model (Bäckström & Ingelsson, 2015). With the initiation of lean within an organization, obstacles escalate within the organizational structure as new leadership responsibilities emerge in managing the training of employees (Johnson et al., 2013). The research supports that failures exist, attributable to managers not trained to address the strategic implementation of lean training throughout the organization (Aziz & Hafez, 2013).

To apply lean strategies in the workplace, managers should train employees in lean principles to address the challenges of the internal and external environment (Johnson et al., 2013). In training employees, learning must take place. Managers need training in the fundamental principles and need experience with the concepts of lean implementation practices (Aziz & Hafez, 2013). After training occurs, managers can serve and be effective in facilitating and aligning lean values (Johnson et al., 2013).

Organizational leaders identify a champion for the new initiative (Knapp, 2015). Normally, organizational learning requires a frontline champion versus an organizational

leader; for learning to take hold within the organization, it requires employees to be knowledgeable, skilled, and dedicated to the initiative along with frontline champion and supportive leaders (Johnson et al., 2013; Ranjbarfard, Aghdasi, López-Sáez, & Emilio, 2014). In addition to the support from management, other factors also influence organizational learning, such as organizational culture and globalization (Liu & Woywode, 2013). The leadership of the organization has an effect on organizational culture and globalization (Wiewiora, Murphy, Trigunarsyah, & Brown, 2014).

There are benefits to lean training. Lean training strategies serve as an avenue for managers to share knowledge of existing systems related to quality management and promotes the reduction of waste that results from lean implementation (Thangarajoo & Smith, 2015). The lean training strategies develop into the instruments for intensifying the learning experiences of staff and groups (Aziz & Hafez, 2013). When managers execute these lean training strategies successfully, organizational learning occurs and resonates throughout the organization (Liu & Woywode, 2013).

Organizational learning becomes an initial point for addressing the knowledge requirements of lean system management and implementation (Aziz & Hafez, 2013). Siren (2012) noted that organizational learning also addresses the process of attaining the expansive organizational objectives of developing sustainable disciplines and employees' abilities to increase and improve organizational capacity. As an efficient use of intellectual capital, organizational learning leads managers to a new way of management thinking for the improvement of gaining a competitive edge (Aziz & Hafez, 2013; Otto, 2012).

Kim, Hahn, and Lee (2015) noted that managers emphasize team-based and organizational training as a way to approach knowledge-enhancing strategies. Strategies for employee training include time to train employees in lean methodologies, lean tools, and concepts process reengineering (Al-Balushi et al., 2014). In the business environment, the upsurge is in knowledge sharing and management systems (Wiewiora et al., 2014). Conjecture about the success or failure of past approaches demonstrates the need to develop and implement new training management strategies.

Any resistance by employees to implementing new ideas is because of the employees consider the strategies being fads (Ijaz & Vitalis, 2011). Not discounting the benefits of past management thinking, new philosophies build on management thinking, offering insights and learning required for the growth and survival of organizations (Siren, 2012). The progress in converting organizational learning to knowledge management is evidence of the evolution of management philosophy built over time in management practices (Alegre, Sengupta, & Lapiedra, 2013). Enhancement of existing management practices can promote collaboration and leader-follow interactions that benefit organizations (Colbert, Barrick, & Bradley, 2014). To improve human capital strategies, organizational managers must contextualize existing management approaches to fit the vision of the organization (Inabinett & Ballaro, 2014).

Organizational managers should plan to address changes in the internal and external environment. Gaining a competitive advantage in a global economy requires successful plans based on the consideration of industry market, social, political, environmental, and business condition trends (Campbell, Coff, & Kryscynski, 2012).

Strategies encompass plans to meet the needs of an organization and achieve successful business outcomes (Bryant & Allen, 2013; Cox & McLeod, 2014).

Looking at traditional management and the requirements for organizations to use new training strategies in achieving competitive advantages, practitioners are making decisions that increase the attention given to training in the natural evolution of business (Campbell et al., 2012; Jehanzeb & Bashir, 2013). The value ascribed to training and knowledge management principles happens when successful implementation of these strategies occurs (Sarma, Islam, & Gazi, 2013; Smith, Stokes, & Wilson, 2014). Managers, practitioners, and scholars must understand training strategies within the contextual requirements of the organization (Saks & Burke, 2012). Organizational successes represent the gains from new knowledge and the benefits of training strategies that develop from the implementation of effective operational philosophies (Otto, 2012). The benefits that managers gain from putting training strategies into practice are potentially limitless (Jehanzeb & Bashir, 2013).

Lean Applications in Healthcare

Hospitals should operate within a patient safety culture (Chowdhury & Habib, 2015). Weaver et al. (2013) discussed the concept of the patient safety climate as a business process. The patient safety culture of an organization, such as a hospital, includes the beliefs, values, and practices of the individuals that comprise the organization (Weaver et al., 2013). According to Chassin and Loeb (2013), organizational leaders who champion for a patient safety culture continuously strive to acquire information from employees to improve the internal environment and address any

unsafe conditions. Øvretveit (2012) advocated for the implementation of sustaining strategies health care leaders can apply for quality improvements.

Healthcare organizations are in business to provide needed health care services (Poksinska, 2010). However, Vranceanu (2014) outlined profit as the goal of a business. In 2011, healthcare represented 17.9 % of the gross domestic product (Fuchs, 2013). Healthcare is an industry that continues to increase costs (Basole, Bodner, & Rouse, 2013; Benson, 2013). Inefficiencies exist within the healthcare industry (Kaplan & Witkowski, 2014). Healthcare managers are using lean and other process improvement strategies to address operational efficiencies to achieve cost reduction and process improvement by eliminating waste (Ulhassan et al., 2013). Marchildon (2013) and Wackerbarth et al. (2015) noted that organizational managers could use lean training to increase success in process improvement. Prior lean tool applications helped hospitals become more effective, efficient, and sustainable (Chassin et al., 2015).

Medical inefficiencies or defects result in an economic burden to the taxpayers (Stoyanova, Raycheva, & Dimova, 2012). Toussaint and Berry (2013) and Berwick and Hackbarth (2012) noted that there is a need to address efficiency and quality in the healthcare system. Chassin (2013) urged for more timely action and better solutions to address hospital inefficiencies and healthcare risks in healthcare settings. In order to address inefficiencies, some healthcare organizations utilize lean to eliminate waste from system processes and increase efficiencies (Yusof, Khodambashi, & Mokhtar, (2012).

Pronovost (2015) discussed the connection between the TPS and applications in healthcare to build more reliable healthcare settings. According to Aij, Simons,

Widdershoven, and Visse (2013), the benefits of lean improvements affect patients, employees, and the organization as a whole. Benefits of lean are improved efficiencies and reduced costs (Thangarajoo & Smith, 2015). Healthcare managers have the focus on patient-centered care and continuous quality improvements (Critchley, 2015). The investments in training programs and actions on behalf of management to remove barriers increase the success of lean implementation projects (Aij et al., 2013). To accomplish improvement in waste and workflow, leaders should utilize a systemic process assessment and analysis using principles, practices, tools, and methods to implement process improvement (Graban, 2009; Wackerbarth et al., 2015).

Prior researchers focused on the applications of six sigma in the healthcare industry across a variety of different facets of healthcare (Chassin et al., 2015; DelliFraine, Langabeer, & Nembhard, 2010; Pronovost, 2015). For example, Chassin et al. (2015) reported the results of lean and six sigma applications as change management tools in hospitals to improve hand hygiene and Filho et al. (2015) studied the implementation of lean healthcare techniques in a Brazilian surgical unit. Chassin et al. noted significant improvements in hand hygiene with the use of lean strategies. Chassin et al. concluded the approach helped the hospitals in the study customize improvement efforts by identifying the causes most prevalent in each hospital setting. Filho et al. (2015) identified a set of improvement cycles applied continuously to improve the value chain in the Brazilian study. Filho et al. claimed the implementation of the set of improvement cycles led to better cycle time and capacity, resulting in cost reductions. Filho et al. also noted a significant reduction of 94% of delays in surgery, related to better

and more organized materials. The authors also noted reductions in post-surgical infections (Filho et al., 2015).

Lean strategies in hospitals may improve the quality of healthcare by reducing waste and facilitating optimal workflow (Andersen et al., 2014). Andersen et al. (2014) identified conflicting evidence of the research results of lean applications in health, through a meta-analytical research approach to the peer-reviewed literature. Conclusions drawn were that quantitative and qualitative studies led to contradictory results. Andersen et al. identified 23 factors that enabled successful lean intervention strategies in hospitals; the most common of these factors were capable leadership, a supportive organizational culture, effective training, accurate data collection, involved healthcare workers, prior experiences, and use of team processes.

Mazzocato et al. (2010) conducted an earlier metaanalytical approach to the lean strategy applications in healthcare, involving 33 peer-reviewed articles, that all reported positive results. Mazzocato et al. found the majority of research involved narrow technical applications with limited organizational reach. Mazzocato et al. noted common contextual factors that were important to lean intervention successes pertaining to four change mechanisms: "understand processes to generate shared understanding; organize and design for effectiveness and efficiency; improve error detection to increase awareness and process reliability; and collaborate to systematically solve problems to enhance continual improvement" (p. 376). To maximize the potential benefits of lean applications, Mazzacato et al. suggested healthcare organizations should directly involve

senior leaders, bridge functional divides, focus on value creation, and prioritize the long-term goals of continual improvements.

Transition

In Section 1, the historical background of continuous process improvement and the evolution of lean thinking were the focus. In addition to the purpose of the study, I addressed how the study could affect strategies to implement lean training for process improvement in a healthcare setting. Based on using the qualitative research method and the case study design, I discussed the central research question of the study. To explore the evolution of process improvement that reflects positive change as a result of lean tool applications, I completed semistructured interviews with healthcare managers. Some of the key points in the literature review were organizational leadership and organizational learning. There were different management approaches in the literature review to lean training, including how the organizational culture influenced employee training. There are ways to address lean training, such as the training techniques and problem solving techniques.

Section 2 includes the criteria for selecting the participant population, sampling, and reasoning behind the research method and research design. The ethical research techniques included the process to acquire consenting participants, instructions for participants to withdraw from the study, and security specifics to protect the data over a specified timeframe. Other areas incorporated in the study include the data collection, data analysis, and data organization techniques. Furthermore, Section 2 encompasses how the processes in the study enhanced reliability and validity of the study.

In Section 3, I address the presentation of findings. The findings could address strategies and social change resulting from the study. Additionally, Section 3 includes recommendations and reflections upon the study. The recommendations could strengthen the research of other scholars embarking upon a continuation of this study.

Section 2: The Project

Organizational managers use lean and other process improvement strategies to address inefficiencies or defects through standard work and employee training (Poksinska, 2010). Employee training is an essential element in the sustainment of process improvements (Dibia et al., 2014). Bertram et al. (2013) defined training as the understanding, abilities, and mindset to learn and address tasks or job duties within the workplace environment. Exploring the lean training strategies that healthcare managers may adopt was the focus of this qualitative exploratory case study.

Section 2 encompasses the project plan of the study. The detailed plan includes the purpose statement, role of the researcher, sampling to identify participants, research method, and research design. Section 2 also contains the ethical aspect of identifying the target population, participant sampling requirements, data collection instrument, data collection techniques, and data analysis. Section 2 also contains the process to ensure reliability and validity.

Purpose Statement

The purpose of this qualitative case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. The target population consisted of healthcare managers in a single rural care hospital located in Tennessee who have implemented lean training strategies to train staff in lean principles and lean tools. Vaz de Carvalho, Lopes, and Ramos (2014) and Wackerbarth et al. (2015) suggested that training staff is essential to business success and that the training method and tools influence the success of the training program. Wackerbarth et

al. (2015) noted that organizational managers use lean principles to improve quality, improve workflow, and reduce costs. As improvements emerge through workflow, quality, and decreasing costs, positive social change could also emerge.

The implication for positive social change includes the potential to improve job satisfaction and lower job stress, which could lead to lower turnover and better healthcare within the rural community. Improved job satisfaction and reduced waste in hospitals lead to lower costs, fewer inefficiencies, improved quality care, and a safer healthcare environment for the citizens in the community. Improvements to healthcare systems lead to better patient outcomes, which can lead to a healthier population accompanied by social benefits such as improved work performance and socioeconomic well-being of a healthier workforce.

Role of the Researcher

I was the data collection instrument for this research study. Pezalla, Pettigrew, and Miller-Day (2012) confirmed that the researcher's role in a qualitative study is to assume the role of the data collection instrument. I gathered data throughout the research process, created the process design, conducted interviews, and planned the entire data collection process. The data collection process in qualitative research can consist of multiple sources of information such as observations, interviews, archival records, or documentation such as articles (Kaczynski, Salmona, & Smith, 2014). I used semistructured interviews and document review for data collection. Following approval by the Walden University Institutional Review Board (IRB) to conduct the research as outlined in the study, I collected data and conducted the interviews. I incorporated the

information from data collection and interviews into Microsoft Word®. Incorporating data into the NVivo qualitative data analysis software facilitated the identification of themes (Sotiriadou, Brouwers, & Le, 2014).

Unluer (2012) stated that a researcher should explain their roles in relationship to the research. Marshall and Rossman (2016) implied that any relationship with the topic should be identified to alleviate bias. Presently, I work within the healthcare field as a frontline staff member. As a frontline staff member, I am not in management or supervisory role. The environment in which I work is that of a tertiary healthcare setting, not a rural hospital setting. I am not a manager or work in a rural hospital. The only relationship I have with the topic is that of working in the healthcare industry.

As a student at Walden University, I must comply with the University's ethical standards in conducting research. As noted by Denison and Stillman (2012) in following ethical guidelines, the research must meet the standards and be representative of quality research. The Walden University IRB gave approval to conduct the study. After approval, I conducted the study and reported the findings in an unbiased manner.

The Belmont Report is a government document used to address ethical guidelines concerning human subjects (U.S. Department of Health and Human Services, 1979). Adams and Miles (2013) discussed the fundamentals of The Belmont Report, which addressed justice, beneficence, and respect. Adams and Miles suggested that researchers should adhere to the same treatment for each participant following the fundamentals of The Belmont Report to include justice, beneficence, and respect. Adams and Miles described beneficence as adhering to all guidelines to decrease any possible harm to the

participant and increase any possible benefits to the participant. As outlined in The Belmont Report, respect for each participant is important (Adams & Miles, 2013). Each participant was interviewed independently as a single unit. I kept the data from each interview separate.

I mitigated bias by using bracketing, methodological triangulation, member checking, and qualitative data analysis software. Chen (2015) noted that bracketing mitigates bias by addressing researcher preconceptions that could impact the research. I adhered to bracketing throughout the research process. Bracketing alleviates prejudices and mitigates bias by consciously recognizing and setting aside my own preconceived notions about the topic. According to Denzin (2012), bias can be mitigated through methodological triangulation. Kapoulas and Mitic (2012) discussed how using different ways of assessing data, such as document review, member checking, and reflective journaling mitigates bias in the research process. I utilized methodological triangulation by analyzing more than one type of data in this study.

As noted by Marshall and Rossman (2016), member checking is the process of sharing a one to two page summary with the interviewee outlining a synthesis of the initial interpretations of the data in order to identify any misinterpretations. According to Houghton, Casey, Shaw, and Murphy (2013), member checking serves as a tool to ensure the meanings of interpretations are correct. Member checking also gives researchers the opportunity to gain new insights from participants, who can justifiably augment, clarify, or refute the initial interpretations (Anney, 2014). I used the member checking process to help mitigate bias and enrich the study.

NVivo data analysis software is a user-friendly tool used to analyze and organize different data types (Castleberry, 2014). Sotiriadou et al. (2014) discussed the use of NVivo data analysis software to identify themes through data coding. Castleberry (2014) discussed mitigating bias in the data analysis process by using NVivo data analysis software. I used NVivo data analysis software to mitigate bias through the application of consistent automated processes to organize and analyze the data.

Gibson, Benson, and Brand (2013) and Lawyer, Baergen, and Kuruvilla (2013) mentioned that the researcher should use specific procedures or protocols to protect participants. Yin (2014) discussed how using the interview protocol would allow for uniformity and constancy in the interview data collection process. Creating a consistent pattern using the interview protocol (see Appendix A) allowed me to create consistency in data collection (see Appendix B).

Participants

Identifying study participants through the eligibility criteria provides a systematic way to identify those capable of answering the research question (Beadle, 2013; Konig & Waistell, 2012; Yin, 2014). Each participant must meet the eligibility criteria of the study. Conte (2014) stated that individuals who meet the specific criteria or are part of a predefined group are essential for trustworthy case study research. Githaiga (2015) discussed how the criteria narrows or limits the participants.

The eligibility criteria for healthcare managers encompassed several elements. The healthcare managers must be employed by a Tennessee rural hospital. In working in a rural hospital, the healthcare managers who could qualify as participants must have had

experience applying lean training strategies successfully to combat escalating costs. Eligible participants had healthcare leadership experience of at least 2 years. To facilitate data collection and a comprehensive understanding of both the research questions and interviewer, participants were fluent in reading, writing, and speaking English. I screened the participants for the above-stated criteria. Participants self-reported eligibility in each of the required areas.

Bickford and Nisker (2015) noted that gaining access to participants can sometimes be difficult. Edwards and Holland (2013) also discussed ways to recruit participants, including outreach literature such as leaflets or a similar form of invitation that includes information about the study. Gaining access to participants in an ethical manner is important to the credibility of the research (Moodley, Sibanda, February, & Rossouw, 2014). In this study, I used publically available hospital information that lists the names, titles, and contact information of their leaders. After identifying the leaders in the rural care facility, I sent each participant a letter of invitation (see Appendix C).

Establishing working relationships with participants leads to more in-depth data in qualitative research (Boblin, Ireland, Kirkpatrick, & Robertson, 2013; Gagnon, Jacob, & McCabe, 2015). Proactive communication is a key element necessary to build working relationships with participants (Moll, 2012). As noted by Gladstone, Fitzgerald, and Brown (2013), building trust and working relationships with participants occurs over time as communication takes place. I established a working relationship with the participants by communicating through email and telephone communications. I built working

relationships with those participants who contacted me for additional information after reviewing the letter of invitation (see Appendix C) and the informed consent.

Research Method and Design

Marshall and Rossman (2016) noted that after the researcher develops the research question, they should choose the method that aligns with their goals. According to Bradt (2012), different research questions require different research methods and support. After reviewing the different methods and designs, I chose the qualitative research method and the case study design because they aligned with the research question.

Research Method

There are three types of research methods: quantitative, mixed methods, and qualitative (Sandelowski, 2014). Numerical data outlining variables to address a specific hypothesis is the focus of the quantitative research method (Hoare & Hoe, 2012). The purpose of using the quantitative research method is to solve a problem by testing the hypothesis through determining variables and the relationship, if any, among those variables (Frels & Onweugbuzie, 2013). Addressing information from a statistical viewpoint was not appropriate for the focus of this study. The statistical interpretation of numerical data was not the intent of this study. Therefore, the quantitative research method was not suitable for this study.

The mixed methods methodology is a combination of both the qualitative research method and the quantitative research method (Hoare & Hoe, 2013). Quantitative statistical information was not the intent of this study because the focus was to acquire

rich, in-depth qualitative information to address the research question. Analyzing variables would not have resulted in the knowledge needed to address the research question, so the mixed methods approach was not appropriate for this study.

I used the qualitative research method in this study. The qualitative research method allows for descriptive and interpretive information to be relayed through interviews (Yin, 2014). As suggested by Yin (2013), the qualitative research method is the appropriate method to address *how* and *why* questions to address a central research question. I chose the qualitative research method to allow study participants to express their knowledge by addressing the research topic through their responses to semistructured interviews with open-ended questions (see Appendix B).

Research Design

The research question for this study was the basis for using the single case study design. According to Yin (2014), the case study research design is useful for addressing organizational or business studies. Yin (2013) noted that the holistic, single unit analysis applies in research when the case is unique or distinctive. The research of a particular healthcare organization is relevant and unique.

Case study research can encompass more than one source of data collection. There are three categories of case studies; namely, explanatory, descriptive, and exploratory (Yin, 2014). Within the explanatory or causal case study, the objective is to have the same events but competing explanations of the events (Yin, 2013). The descriptive case study is focused on a particular phenomenon. According to Thite, Wilkinson, Budhwar, and Mathews (2016), the exploratory case study is one that

explores a unique phenomenon and provides for a holistic exploration. The single case study design is relevant when the case is distinctive (Yazan, 2015). In this study, the public Centers for Medicare and Medicaid Hospital Compare website were the means by which I identified a facility with high quality scores based on the public data. Therefore, this case was unique. Based on the focus of the research which was to uncover strategies used by healthcare managers to address lean training, the single case study design to conduct this qualitative research was appropriate.

The phenomenological and ethnography designs were inappropriate for this qualitative research. The phenomenological research design stems from psychology and philosophy (Petty, Thomson, & Stew, 2012). The lived experiences of the study participants and the exploration of the phenomenon are the focus of the phenomenological research design (Finlay, 2013; Gill, 2014; Moustakas, 1994). The phenomenological research design could be useful to help capture lived experiences, but not well suited to gain in-depth knowledge about the topic that is to learn from strategies regarding lean training. For this reason, the phenomenological research design was not selected for this study.

Ethnographic researchers explore behaviors and activities within the specific environment of the participants living in the village, community, or culture (Watkins, 2012). The focus of this qualitative research study was not to explore a culture or group. The aim of this qualitative research study was to gain knowledge from healthcare managers of strategies used to address lean training. Therefore, the ethnographic design was not selected for this study.

Data saturation is when no new data, information, or findings materialize through the interview process (O'Reilly & Parker, 2013; Petty et al., 2012). According to O'Reilly and Parker (2013), the sample composition and the repeating of data throughout the interview session indicates data saturation. The composition of the sample size may relate to data saturation because a larger sample is more likely to lead to data saturation than a smaller sample (Burmeister & Aitken, 2012). The sample composition of eight healthcare managers in this study offered enough data to help answer the research question. I conducted interviews until the depth and breadth of the interview ended with the result of no new information. Sufficiency of data saturation is key to the interview process (Onwueguzie & Byers, 2014).

Population and Sampling

The population of this study was the eight healthcare managers in a single rural hospital in Tennessee who have successfully implemented lean training strategies to address increasing costs. According to Tsang (2014), the sample size for the case study can be small. In this study the sample consisted of all eight healthcare managers that have successfully implemented lean training strategies to address increasing costs.

In this study, the sampling method was census sampling. I interviewed eight healthcare managers in a single rural hospital who represent all of the members of the population. Descriptions of sampling is important to qualitative researchers who may seek to evaluate the transferability of the study (Yin, 2014). As noted by Palinkas (2013), there are several popular sampling strategies in qualitative research, including criterion sampling, purposeful sampling, and convenience sampling, among others. When a

specific group meets the criteria or an entire population is the sample for the study, the sample would not be random (Conte, 2014). However, nonrandom sampling and census sampling are acceptable approaches in qualitative research, when the guidelines for sample size stem more from data saturation or the boundaries of a case study (Guetterman, 2015).

The sampling strategy in qualitative research must represent a systematic way to identify those capable of providing data that can help answer the research question (Beadle, 2013; Konig & Waistell, 2012; Yin, 2013). According to Sezgin, Koşar, Kılınç, and Öğdem (2014), sampling must include the individuals who have the background knowledge directly related to the topic. The sample for this study consisted of eight healthcare managers in a rural hospital in Tennessee who successfully implemented lean training strategies to address increasing costs.

Tsang (2014) and Czajkowski et al. (2015) noted that the sample size for the case study can be small. Using a small sample to capture rich data can be more advantageous than reliance upon a large sample (Frels & Onwueguzie, 2013). Larger samples may lead to qualitative data that is too voluminous to manage, while smaller samples may result in a lack of sufficiently new information for a textured understanding of the topic (Fugard & Potts, 2015). In this study, I included all eight members of the population, which is a sample size that is suitable for qualitative research in a bounded case study (Guetterman, 2015). Yin (2013) noted that in a case study design, a researcher can use a minimum of eight participants for the sample size.

Guetterman (2015) suggested that researchers specify a sample size based on similar published research along with an explanation that the sample size is tentative and may change during the process of research. In this study, I intended to interview all eight healthcare managers in the population. However, it was possible that not all eight members of the population would be able to participate and complete the study. Therefore, I also relied on the concept of data saturation to guide my determinations about an adequate sample for the study. Marshall, Cardon, Poddar, and Fontenot (2013) discussed how the sample size depends on the intent of the study, time constraints, and the willingness of participants to become subjects of the study. Marshall et al. acknowledged that a sample size of eight could be enough for a qualitative study when the goal is to achieve data saturation, which is the point at which no new information emerged from repeated efforts to collect data from members of the population.

The interview process ended when no new information emerged from the interviews, which is the point of data saturation as discussed by O'Reilly and Parker (2013). As noted by Petty et al. (2012), data saturation achievement occurs when no new data surfaces to help new themes emerge. As noted by O'Reilly and Parker, data saturation occurs to when the same information materializes from the interview process and data collection efforts. Onwueguzie and Byers (2014) discussed how data saturation pertains to the research interview process, and researchers need to be attentive to the point at which information offered by participants to answer the research question starts to become repetitive. I continued to interview participants and collected data until I

recognized the point at which no new data emerged from additional interviewing and data collection efforts.

The letter of invitation is in Appendix C. The letter was an attachment to the emails to participants, obtained through the publically available contact information listed on the hospital website. When potential participants responded to the letter of invitation (see Appendix C), they indicated interest in participating in the study and self-reported their eligibility in relation to meeting all the criteria noted in the invitation. The criteria for participation in this study was that the participant served as a healthcare manager in a Tennessee rural hospital. The participant possessed knowledge of lean training strategies and had experience implementing lean training strategies to combat escalating costs. Participants possessed at least 2 years of leadership experience in the healthcare field. Fluency in reading, writing, and speaking English was a requirement for participation in the study.

After meeting the criteria, I contacted potential participants to set an appointment date and time that was mutually acceptable. The informed consent form was an attachment to an e-mail to participants, discussed with each participant prior to the actual telephone interview to develop a relationship with the participant. In this study, I conducted semistructured interviews. The semistructured interviews occurred using the telephone. According to Trier-Bieniek (2012) and Sullivan (2013), telephone interviews are appropriate when there is a time constraint. Although studies conducted by Sturges and Hanrahan (2004) resulted in findings of no significant differences in the data

collected between telephone and face-to-face interviews, Trier-Bieniek (2012) contended that telephone interviews could result in more honest qualitative data.

According to Edwards and Holland (2013), the interview setting should be in a private, quiet area. Marais and Van Wyck (2014) claimed a quiet interview environment could enhance the quality of the data recordings. Ritchie, Lewis, McNaughton, and Ormston (2013) emphasized the benefits of comfort, privacy, and a quiet environment that could reduce the background noise, resulting in more audible recordings. I conducted the interviews from my home, to enhance my own comfort and privacy and to reduce noise and possibility of interruptions. I also asked participants to choose a quiet, private, comfortable environment where they could talk on the telephone freely and without background noise or distractions.

Ethical Research

After the Institutional Review Board (IRB) approved the proposal, I began the data collection process. Abernethy et al. (2014) noted that researchers must follow the ethical guidelines outlined by the IRB concerning human research participants. I complied with the ethical guidelines outlined by the IRB. I completed the National Institutes of Health Office of Extramural Research (NIH) training course entitled, *Protecting Human Research Participants* and obtained a certificate of completion (see Appendix D).

Beskow, Check, and Ammarell (2014) discussed the importance of informed consent and confidentiality procedures in research involving human participants. The informed consent of each participant was necessary before beginning data collection.

Check, Wolf, Dame, and Beskow (2014) and Tam et al. (2015) emphasized adherence to ethical research standards by the construction of informed consent forms that participants can understand. Within the informed consent form, it includes the following items: purpose of the study, qualifications of participants, requirements of participants, notification of voluntarily participating, opting out procedures, risks and benefits, compensation, privacy and confidentiality assurances, contact information for questions, and procedures for signing the informed consent form. I fulfilled the ethical standards of Walden University. I e-mailed the informed consent to the participant. The participant kept a copy for the files, and I kept a copy. The participant was asked to reply to the e-mail with the words *I consent* acknowledging agreement to participate in the study according to the terms of the informed consent form.

Edwards and Holland (2013) suggested that informed consent forms and any informational leaflets like letters of invitation should include explanations about the right to withdraw. The letter of invitation (see Appendix C) and the informed consent form included the language of how to withdraw from the study. A participant may withdraw at any time. To opt out of the study, the participant would contact the researcher. If a participant wanted to withdraw without speaking with me or talk privately about their rights, they could have contacted the Walden University representative, Leilani Endicott, at 1-612-312-1210. By refusing or discontinuing participation, there would have been no penalty. After the notification of withdrawal from the study, all data would have been destroyed by shredding paper documents and deleting all electronic files. However, no participants withdrew from the study.

Halpern (2011) highlighted the ongoing debate about trust and ethics surrounding financial incentives to research participants. Resnik (2015) claimed that financial incentives to research participants may result in biased research through inducements that can lead to a self-identified sample that may not truly represent the research population. There was no incentive or compensation for participating in the study. The letter of invitation (see Appendix C) and the informed consent contained a statement that there is no payment or compensation associated with participation in the study.

According to Abernethy et al. (2014) and U. S. Department of Health and Human Services (1979), a responsibility of the researcher is to protect the participants. Abernethy et al. suggested that a researcher must protect the privacy and confidentiality of data at all times to protect the participants. The informed consent form contains and assures the participants of their rights. Upon agreement, the participant sent a return e-mail stating I *consent*. I followed the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research recommendation to ensure the ethical protection and rights. I adhered to the University IRB recommendation concerning the protection of the participants (see Appendices C and D). The IRB approval number was 06-22-16-0190300.

All data received remained confidential and private. Measures were taken to protect participants' confidentiality. Use of pseudonyms masked the identities of the participants consistent with recommendations by Quick and Hall (2015). For example, I assigned each participant a pseudonym such as Participant 1 (P1) through Participant 8 (P8). By using a pseudonym for the participants throughout this doctoral study, this

masking serves as another level of confidentiality (Quick & Hall, 2015). The informed consent form is the agreement outlining the responsibilities, protections, rights, and protections of the research participants.

Bull, Roberts, and Parker (2015) noted that data safety and participants' privacy must be secure. Ensuring confidentiality and data safety involves taking measures to protect the names of participants, the organization, and any affiliated entities. Each participant had a corresponding pseudonym, such as Participant 1 (P1) through Participant 8 (P8). Information provided is confidential. Personal information was not used for any purpose. Also, names and other information were masked to protect participants and the organization. Data were secure by encrypting it with a password on a jump drive. Data will remain secure for a period of 5 years, as required by Walden University. After the 5 years, destruction of all information will occur by shredding paper documents, deleting all electronic files, and destroying the jump drive.

Data Collection Instruments

In a qualitative case study according to Yin (2014), data collection may include the use of archival records, documents, interviews, direct observations, participant observation, and physical artifacts or the combination of these. I served as the primary data collection instrument. In this study, the data collection instrument included semistructured telephone interviews and document review.

Anyan (2013) and Faseleh-Jahromi, Moattari, and Peyrovi (2013) suggested that in qualitative research the semistructured interviews are appropriate for in-depth inquiry and flexibility. Trier-Bieniek (2012) suggested that telephone interviews could be an

efficient means of communication with research participants. Barei and Le Pen (2014) noted that in healthcare, data collection is most often acquired through semistructured interviews.

According to Trier-Bieniek (2012), telephone interviews can be useful for in-depth inquiry into open-ended research questions. Tan, Yee-Foo, Teoh, and Tym-Wong (2014) noted that the telephone interviews are a safe and effective instrument to collect data. There are several advantages to telephone interviews. Use of telephone interviews facilitates access to a greater number of participants, involves less time and less money to conduct the interviews, and recorded telephone interviews can be uploaded as electronic files to the computer for subsequent transcription (Vogl, 2013).

The semistructured telephone interview consisted of eight interview questions (see Appendix B). I confirmed receipt of a an electronic consent form prior to the start of the interview questions. The use of FreeConferenceCalling.com facilitated the recording of the interviews. Edwards and Holland (2013) and Ritchie et al. (2013) stressed the importance of audible recordings of data that can lead to easier transcriptions. Simola, Barling, and Turner (2012) noted that recorded interviews permit the transcript to be an accurate depiction of the interview. In addition to the e-mail informed consent form, prior to the interview beginning, I asked the interviewee to acknowledge verbally that they approve the recording of the interview.

Yin (2013) suggested that in a case study design another data collection instrument could be document review. Kapoulas and Mitic (2012) also noted document review as a data collection instrument. The document review data was public data.

Hospital leaders utilize a survey, administered as a part of the Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS), to collect data and report scores, representing patients experiences regarding care (HCAHPS, 2014; Radtke, 2013). Information was accessible through the public government Hospital Compare website. Additional documents were available through public websites, including hospital services, quality reports, and quality ratings, for review in this study. Edwards and Holland (2013) noted that documents collected before, during, or after interviews may add perspectives to qualitative data efforts. However, creating a consistent pattern and a system of organization is necessary when using the document review protocol (Pacho, 2015). I applied a consistent document review protocol.

According to Andraski, Chandler, Powell, Humes, and Wakefield (2014), reliability and validity of data can be addressed using member checking. Marshall and Rossman (2016) noted that member checking is the sharing of interviewee responses to the interview questions in a one or two-page summary allowing the interviewee to check the interpretation of the data for accuracy. Checking for the proper meaning of the data is vital to the validity of the data (Houghton et al., 2013). I conducted member checking in this study by sharing a summary consisting of one or two pages synthesizing the data gathered via semistructured interviews of the participants to review for clarity of interpretation.

Data Collection Technique

Stake (2013) and Yin (2014) discussed how the data collection technique is important to the integrity of the data. Interviews and document review are the two types

of data utilized in this study. After the Institutional Review Board (IRB) approved this study, I began the data collection process. In accordance with ethical research standards advocated by Check et al. (2014) and Beskow et al. (2014), no contact with the participants occurred until after IRB approval.

I scheduled a semistructured telephone interview with each participant. Agreeing to the date and time of the interview between the participant and myself was key to communicating specifics of the interview. The semistructured interviews took place via the telephone. The participants returned the *I consent* email to me prior to the interview. The interview was anticipated to last one hour. Pezalla et al. (2012) discussed how the researcher facilitating the interview impacts the conversational space and relates to the comfort of the participant. The interview setting should be in a quiet area, free from background noise, to enhance the quality of audio recordings (Ritchie et al., 2013). A home or office that has a comfortable and private setting are examples of potentially comfortable, quiet, and private interview environments (Edwards & Holland, 2013). According to Trier-Bieniek (2012) and Tan et al. (2014), telephone interviews can be appropriate, efficient ways to obtain interview data. I conducted the interviews in a quiet location, using the telephone, with no interruptions.

Trier-Bieniek (2012) and Tan et al. (2014) noted that telephone interviews can be a tool to collect data. Telephone interviews occurred after participants sent the *I consent* email acknowledging the informed consent form. The telephone interview consisted of eight interview questions (see Appendix B). I adhered to the interview protocol (see Appendix A). By adhering to the interview protocol (see Appendix A), all interviews

occurred in a like manner by answering each question sequentially. Edwards and Holland (2013) and Ritchie et al. (2013) noted that high quality recordings of interviews are useful in the data collection process to facilitate the ease of transcriptions. To transcribe the exact information discussed during the semistructured interview, I listened to a digital recording of each interview session while typing the words.

Kapoulas and Mitic (2012) and Yin (2013) noted in a case study that another data collection instrument could be document review. The data accessible for the document review was public data. The governmental website for hospital data noted as Hospital Compare is accessible by the public. I accessed Hospital Compare, the public website with data representing patients' experiences via the HCAHPS survey (Radtke, 2013). To be consistent and review each document in the same manner, I followed a document review protocol (see Appendix E). Edwards and Holland (2013) discussed how collecting documents in an organized manner can add perspectives to qualitative data efforts. However, creating a consistent pattern, such as an interview protocol, is helpful in organizing the document review data collection efforts (Pacho, 2015).

Bekhet and Zauszniewski (2012) and Zohrabi (2013) defined methodological triangulation as using multiple data sources to view the research problem. As noted by Denzin (2012), methodological triangulation involves triangulation of the data between at least two data points. Conducting methodological triangulation using data gathered during semistructured interviews and document review assists in attaining reliability and validity. In this study, I utilized at least two data points to triangulate the data of the study.

As noted by Yin (2014), there are advantages and disadvantages to using various types of data collection techniques. Morse (2015) and Yin suggested that by using interviews as the data collection method the interview could delve or focus deeply on the specified topic. Barei and Le Pen (2014) discussed how during the interview the interviewer can probe with related questions according to responses delving deeper to discuss a specific topic using the semistructured interview. As Yin noted, a challenge to using interviews is that the interviewee could have a block in recalling pertinent information relative to the topic, and the information could be reflexive about the topic. Block and Erskine (2012) noted that telephone interviewing could prove challenging due to the distant communication between the interviewer and interviewee, preventing nonverbal communication cues that could add meaning to the interview process. According to Block and Erskine, during a telephone interview trust could be a barrier for interactive communication between the interviewer and the interviewee.

Yin (2013) discussed the advantages of document review that included cost efficiency as an inexpensive way to collect data. Document review can have benefits as well as risks (U. S. Department of Health, 2009). Collecting data via document review is noninvasive (Yin, 2013). There are several challenging characteristics associated with document review including the data could be unsystematic, predisposed, incorrect, or exhaustive in collecting, reviewing, and analyzing numerous documents (Pacho, 2015).

Marshall and Rossman (2016) noted that member checking is the process of developing a one or two-page summary of the interview data interpretations for the interviewees to review for correctness of the data interpretations. According to Houghton

et al. (2013) and Harper and Cole (2012), member checking is a tool used to ensure the capturing of the proper meaning of data interpretations. Sharing the summary for clarity and accuracy of the interpretations is appropriate in qualitative research (Ashby, Ryan, Gray, & James, 2013; Harvey, 2015). Asking the study participants to confirm data interpretation allows the study participants to offer additional insights about the summary, the clarity, and the accuracy of data interpretations. I used the quality check of the data interpretation through member checking that allowed for verification of data accuracy.

Data Organization Technique

Castleberry (2014) and Yin (2013) noted that data organization should occur prior to analysis. Organizing data throughout the research process is necessary for gaining insights into the data that may occur prior to data analysis (Edwards & Holland, 2013). The development of a systematic method to keep track of the different types of data prove useful for data analysis (James, 2012). I used word processing software to compile and organize transcribed interview data and review notes. I used qualitative data analysis software to facilitate the data organization and analysis process.

In this doctoral study, I used NVivo software, cataloging/labeling, masking using pseudonyms, digital interview recordings, and Microsoft Word® to organize the data. In NVivo data analysis software, each case or interview was logged separately by a pseudonym. I utilized labeling and cataloging of the data by masking the participants and organization using pseudonyms in an electronic research log. Using pseudonyms ensured privacy and confidentiality of the data that research experts suggest for maintaining

ethical standards in the research (Beskow et al., 2014; Check et al., 2014; Quick & Hall, 2015). The data collection technique included the steps noted below.

1. Organized the data in Microsoft Word® by assigning and labeling using a pseudonym.
2. Transcribed the data into Microsoft Word® and uploaded into the NVivo data analysis software. Using the software, I developed the theme categories for organizing the data.
3. Organized the data by grouping the codes using statements, words, and phrases.
4. Conducted member checking by developing the one or two-page summary of the interview data for interviewee review for correct interpretation.
5. Secured the data with an encryption code on the jump drive.

Data secured by encryption of passwords on a jump drive. Data encryptions is a form of computer security that ensures the ongoing confidentiality of the data that research experts suggest for ethical research practices (Beskow et al., 2014; Check et al., 2014; Holland & Edwards, 2013). Data will remain secure for 5 years, as required by Walden University. The data will be in storage in a secured lockbox for 5 years. Immediately after the expiration of 5 years all electronic and paper documents will be destroyed.

Data Analysis

As noted by Yin (2014), there are five stages associated with the data analysis process including compiling, disassembling, reassembling, interpreting, and concluding the data. Cox and McLeod (2014) discussed how using the five steps represent a

systematic way of analyzing the data. In addition to using the five steps, there are electronic and manual means of performing data analysis (Cope, 2014). Cope (2014) noted that electronic formats to collect and analyze data have also evolved through technology. Castleberry (2014) suggested the use of NVivo as the data software package to analyze data. In this study, I used NVivo as my data analysis software.

I researched the different types of triangulation for data analysis in case study research. The four types of triangulation are data triangulation, investigator triangulation, methodological triangulation, and theoretical triangulation (Denzin, 2012; Yin, 2013). Anney (2014) and Kapoulas and Mitic (2012) noted that methodological triangulation helps to mitigate bias when analyzing the data. By using methodological triangulation in this case study, I enhanced the validity of the research.

Methodological triangulation involves using more than one source of data to mitigate bias in the research process (Anney, 2014). As explained by Denzin (2012), methodological triangulation involves at least two sources of data. In this study, I utilized at least two data points to triangulate the findings of the study. To enhance dependability and confirmability, methodological triangulation occurred using semistructured interviews and document review. Yin (2014) claimed that document review and interview data are two sources of data that can lead to triangulation.

Semistructured interviews in qualitative research lead to in-depth data about the research topic (Englander, 2012). I used semistructured interviews as the primary data source for this study. Recordings of interviews can enhance the accuracy of the data (Ritchie et al., 2013). To capture the exact information discussed during the

semistructured interview, I utilized a digital recorder to record the interview session. Document review can add detail and perspectives to the data (Pacho, 2015). Public documents from the governmental Centers for Medicare and Medicaid Hospital Compare website was a source for documents to review for this study. Documents available through public websites, included hospital services, quality reports, and quality ratings were additional sources of data for review in this study. After the data collection process was complete, I began the data analysis process.

The first stage or compilation includes gathering all the data (Cox & McLeod, 2014; Essary, 2014). In this study, the data consisted of recordings and transcriptions of the semistructured interviews and a document review of the Centers for Medicare and Medicaid Hospital Compare website. The compilation stage includes reviewing the data immediately following each interview (Essary, 2014). By reviewing the data immediately following the interview, any items unclear could be clarified with the participant (Essary, 2014). Pseudonyms, used as labels on the interview data, ensure confidentiality (Quick & Hall, 2015). I compiled the data immediately following the interview. I used pseudonyms to protect and mask the participants for confidentiality.

Essary (2014) and Yin (2014) noted that the second phase of the data analysis process is disassembling the data. According to Cox and McLeod (2014), when disassembling the data, the themes emerge from the data and emerging keywords and commonalities surface allowing for general coding. The division of data into diminutive segments is necessary for coding to occur (Essary, 2014). Using the software package, Microsoft Word®, I transcribed the content of the interview and attained key words,

phrases, and concepts. I isolated similar data from the document reviews. In disassembling the data, I separated interview and document review data into small segments, to identify themes from coding and the recognition of patterns in the data.

Yin (2014) noted the third step in the data analysis process as reassembling the data. After segmenting the data to code it, I grouped or reassembled the data to identify themes during this stage. Essary (2014) noted that transcript reviews can lead to the identification of other codes that might emerge and suggested that themes emerge from the data during this stage. Reviewing the data repeatedly helps to identify the emergence of the same and or different patterns in the data (Baškarada, 2014; Yazan, 2015). I reassembled the data to identify themes for coding.

According to Yin (2014), the fourth stage of data analysis is the interpretation stage. During the interpretation stage, Essary (2014) suggested that a deeper meaning can be ascertained from the data. To derive at the correct meanings, participants agreed to engage in member checking (Anney, 2014). As suggested by Marshall and Rossman (2016), the member checking process is a review of a summary of the data interpretations, consisting of one to two pages for the correctness of the interpretations. I asked participants to review a one to two page summary of the interpretations and asked for their insights about those interpretations.

As Yin (2014) noted, stage five of the data analysis process consists of developing conclusions from the data. The conclusions would encompass the meaning of the data (Yazan, 2015). Cox and McLeod (2014) noted that findings from the data analysis should

include the report of findings and tables to explain results. I utilized all data sources to develop conclusions and report the findings.

In qualitative research, the qualitative data software analysis package used should be based on three elements of the research including the research method, the research design, and the research question (Cope, 2014). The data analysis package for this study is NVivo. The website for NVivo has the capacity to facilitate identification of keywords and themes in the data (Long, Doerer, & Stewart, 2015). Castleberry (2014) suggested that coding of the data should allow for the emergence of themes. In this study, I utilized NVivo software, cataloging/labeling, masking using pseudonyms, digital interview recordings, and Microsoft Word® to organize the data. I used labeling and cataloging of the data by masking the participants and organization using pseudonyms in an electronic research log. The pseudonyms ensure privacy and confidentiality of the data (Quick & Hall, 2015).

After using the data analysis software, I linked the themes with the literature and the conceptual framework. Yin (2013) discussed how the conceptual framework is linked to the literature, theories, and methodology. In this study, the literature includes themes such as organizational leadership, organizational learning, management approaches to lean training, challenges, organizational culture, employee training, training techniques, and methodologies for problem solving. In this study, the conceptual framework is a compilation of three theories. The main theory is the general systems theory, supported by the related high reliability theory, and the opposing theories are the chaos and normal accident theories. After data collection and analysis occurs, I present the themes and

discussion of the relationship of the themes to theories and to the literature reviewed in the study. I compared previous studies, such as Padgett (2014) and Burris (2013), and newly published studies to verify the findings of this study.

Reliability and Validity

Using documentation to outline the data collection and data analysis stages could enrich trustworthiness (Williams & Bryan, 2013). In the research process, the trustworthiness of the data collection and data analysis process are key to reliability. The trustworthiness of research data and results are fundamental to attaining reliability of the research process (Zohrabi, 2013). There are four distinct strategies to address trustworthiness; namely, dependability, credibility, transferability, and confirmability (Houghton et al., 2013).

Dependability. Providing a thorough explanation of the data collection and data analysis processes adheres to data dependability (Quick & Hall, 2015). Documentation of the steps for data collection and data analysis are integral to tracing data pertaining to decision-making (Crowe, Inder, & Porter, 2015). According to Houghton et al. (2013), using dependability enhances rigor. I explained in-depth the process of data collection and data analysis. I also addressed dependability by documenting each step in the data collection and data analysis process. I was transparent in the data collection and analysis process, thereby enhancing dependability of the data.

Credibility. Explaining in a thorough manner steps to collect and analyze the data addresses an additional step to improve credibility (Quick & Hall, 2015). The reliability used in relation to the interpretation of the qualitative data addresses the credibility of the

data (Crowe et al., 2015). Using member checking is one way to address the credibility of the interpretation (Houghton et al., 2013). Marshall and Rossman (2016) noted that member checking is the process of sharing with the participant a one or two page summary of the interview to review for clarity of interpretation. Koch, Niesz, and McCarthy (2013) discussed viewing different types of data from different perspectives. Using more than one type of data in the data analysis phase enhances credibility of the study. In this study, I used two forms of data to triangulate for credibility; namely, interviews and document review.

Transferability. The assessment of transferability of research findings from one setting to another is uncertain (Burchett, Dobrow, Lavis, & Mayhew, 2013). Describing in detail the original context of the research is important to determining whether the research is transferable from one setting to another (Houghton et al., 2013). According to De Ceunynck, Kusumastuti, Hannes, Janssens, and Wets (2013), the reader or the person assessing the transferability of the study should determine if the research findings are transferable to another setting. Houghton et al. (2013) maintained the use of rich descriptions for the original context of the research and the findings. I described the context of the research with rich descriptions. After the identification of findings, I also described them with in-depth and rich descriptions.

Confirmability. Researcher impartiality heightens confirmability (Bahadori et al., 2015). The accurate accounting of the data during the interview process is necessary for confirmability (Jen & Wang, 2015). Utilizing the process of member checking adheres to the confirmability of the findings (Andraski et al., 2014). In this study, I utilized member

checking to enhance confirmability thereby solidifying the enhancement of confirmability.

According to Petty et al. (2012), data saturation occurs when no new themes, information, or findings materialize through the interview process. Burmeister and Aitken (2012) discussed the composition of the sample size and its impact on data saturation, noting that small samples may not lead to data saturation. As Yin (2014) noted, until data saturation occurs, interviews should continue until no new themes or information surface. I completed interviews with participants and achieved data saturation.

Transition and Summary

Included in Section 2 are the role of the researcher and the planning process that I followed in the development of the study. The research method, research design, population and sampling, data collection and data analysis were addressed as to how I approached the study. To address the rigor of this study, I related in Section 2 dependability, credibility, transferability, and confirmability in the study. In Section 3, I addressed the presentation of findings. In relation to the development of the conclusions, I presented the themes, meaning of the findings related to social change, and my recommendations for further study.

Section 3: Application to Professional Practice and Implications for Change

In Section 3, I introduce the findings of the study related to the strategies healthcare managers use to address escalating costs. Section 3 includes discussion of (a) research findings, (b) application to professional practice, and (c) impact on social change. In addition, Section 3 contains discussion of the recommendations for action and further research, and the conclusions based on the research findings.

The purpose of this qualitative case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. Qualitative data analysis applied to the interview transcripts and document review from public websites and the hospital website addressed the overarching research question. Using methodological triangulation, eight major themes emerged from the data analysis process. The conceptual framework and literature support the emergent themes. The eight major emergent themes were: (a) significant investment of time and money; (b) focus on improving quality of patient care; (c) data-driven planning and evaluation; (d) development of model applications; (e) extensive policy development and communication efforts; (f) commitment, teamwork, and collaboration; (g) hands-on learning; and (h) train the trainers.

Presentation of the Findings

The principal research question that guided the study was the following: What lean training strategies do healthcare managers need to combat escalating costs? To answer this question, I recorded and transcribed the interviews with eight healthcare managers from a rural hospital in Tennessee. Participants had knowledge of lean training

strategies to combat escalating costs and possessed at least 2 years of leadership experience in the healthcare field. I derived the findings from the data analysis of interviews and public document review. I used Microsoft Word® to transcribe the audio-recorded data and organize the data. I accessed the public governmental website containing public Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS) score data for review of ABC Hospital scores compared to national average. I used NVivo data analysis software to organize and analyze the data.

Table 1 contains a description of the sample. The healthcare managers working in the rural hospital participating in this single case study had a range in length of employment and healthcare leadership experience between 2 years and 26 years in duration. Codes to mask the participants' identities were also assigned to participants in the order in which they completed their interviews, hereafter referred to as P1 through P8, as shown in Table 1. Throughout the data collection and data analysis phase of the research, I used Microsoft Word® and NVivo computer software to assist in data organization and data analysis, using the participants' codes instead of real names in the data.

Table 1

Sample Description and Participant Codes

Participant	Experience in years as healthcare manager
Participant 1 (P1)	26
Participant 2 (P2)	20
Participant 3 (P3)	7
Participant 4 (P4)	16
Participant 5 (P5)	2
Participant 6 (P6)	9
Participant 7 (P7)	5
Participant 8 (P8)	11

The subsections below contain the explanations about how the eight major themes emerged from the methodological triangulation of data from the interviews and document review. Data analysis involved the identification of the common key terms and phrases that represented patterns among the qualitative data. Table 2 contains a summary of the main key terms and phrases that formed the patterns that were the main ideas expressed in the eight major themes.

The subsections below include the additional supporting elements of the eight major thematic areas, including some of the direct quotes from the interviewees that led to each of the findings reflected in Table 2. These major thematic areas reflect answers to the research question by representing issues and findings pertaining to the successful implementation of lean training strategies.

Table 2

Major Thematic Data Groups

Major Theme	Key Terms and/or Phrases
Theme 1: A significant investment of time and money.	reduced cost, efficiency, streamline, organizational change, organizational leadership, organizational learning, challenges
Theme 2: A focus on improving the quality of patient care.	patient safety, quality, care
Theme 3: Data driven planning and evaluations oriented toward continuous improvement efforts.	total quality management, evaluations, assessments, planning, continuous improvement
Theme 4: Development of model applications through trials and incremental steps.	improvement teams, continuous improvement, organizational learning,
Theme 5: Extensive leadership-driven policy development and communication efforts.	leadership commitment
Theme 6: Commitment, teamwork, and collaboration.	buy-in, commitment, working together, system
Theme 7: Hands-on learning opportunities instead of classroom-based settings.	classroom, hands on, organizational learning
Theme 8: Training the trainers.	checklist, training, training techniques

Theme 1: A significant investment of time and money.

Evidence from the findings. All of the participants in the study referred to the costs of lean training. Participants discussed the costs in terms of time and money. Table

3 includes the key terms that participants used to refer to the costs of money and time. There were 102 references to the concept of time, including references to saving time and training that requires the investment of time. There were 43 references to costs, with a total of 18 specific references to investment of money, financial expenses, and the need to account for lean training in the budget.

Table 3

References to the Costs of Time and Money

Reference	Frequency
Time	102
Cost(s)	43
Money, Financial, Budget, Invest(ment)	18

Eight of eight participants mentioned, at some point during their interviews, concepts related to the investment of time and money into lean training strategies. Regarding the costs of lean training strategies, P8 talked about "combating escalating costs in regard to implementing lean." P1 said, "We cannot strictly use lean for every process that we want to look at sometimes, because it can be time consuming and take several months to go through the lean process when you start looking at breakdowns." P1 added, "the main thing with lean training is we have to find a way to streamline it because it can be so time consuming …that is very costly for a small hospital… most organizations don't have the resources." P6 stated, "With our employees on multiple

shifts, it was a challenge to get started because not everyone could be gone at the same time." P2 said, "Lean training programs are comprehensive, must be supported at the highest organizational levels, funded, and given the time to make the necessary organizational cultural changes." About the investment of time, P8 said, "It took a lot of training and explanation."

About financial costs, which were cited along with the cost of time, P2 explained, "Culture cannot be changed overnight and it's not cheap" and advised leaders to, "identify instabilities and waste to justify and support the investment in lean… the time commitment…[and] the financial commitment." P4 said lean training may not happen "because of time or whatever other priorities. Really the time and priorities and other duties, it not the total focus of my job. The educational focus outside of the clinical area has to be a priority…." P4 added, "lean training just like anything else has to be supported and run from the top. Resources have to be available, time, money, staff, materials, education and assistance." P4 further explained that although there are costs of time and money for lean training, the "reduced cost is going to be a byproduct. It is going to naturally happen."

Support. The participants responded with concern about the time and money investments associated with the implementation of lean training. The participants noted that there are costs associated with training. This finding is consistent with a previous study by Lawless (2016), revealing that Motorola invested in education and training of staff that resulted in significantly higher savings for the organization. The literature is consistent with this finding in that by improving processes, managers can reduce costs

associated with resources such as supplies or equipment (Lari & Asllani, 2013). The finding is consistent with the conceptual framework outlined by the general systems theory that all systems, such as human resources and monetary constraints, within a complex organization are interrelated.

Theme 2: A focus on improving the quality of patient care.

Evidence from the findings. The benefits cited by participants as outcomes of lean training included numerous references to monetary and time savings. However, seven of the eight participants in the study claimed that the ultimate focus of successful lean training strategies should be on improving the quality of patient care. Table 4 includes the references participants made to the focus of lean training strategies on improving the quality of patient care. There were 13 references to quality, 27 references to patients, and 10 references to care, including patient care, nursing care, critical care, Segment Elevation Myocardial Infarction (STEMI) care, and taking care of patients. The following excerpts from the participants' data illustrate the participants' emphasis on training strategies geared toward improvements in patient care.

Table 4

References to the Focus on Quality Patient Care

Reference	Frequency
Patient(s)	27
Quality	13
Care	10

With respect to the focus of successful lean training strategies on the quality of patient care, P1 said, “We look at the ones [lean training strategies] that takes the most time with the least amount of benefit to the organization or the ones that have the most impact or touch the patient.” P1 added, “So that was to cut off about 10 minutes in the process which is very significant in improving the quality and outcomes for our emergency room patients.” P2 said, “the continuous improvement byproducts of lean to processes are unlimited in terms of quality, productivity, cost, safety.” P3 said, “If you implement the process correctly, it will save you time. You will gain more time and do more for patient care.” P3 described a focus of lean training that involved, “patient safety and the quality measures.” P4 said, “Really it is a lot of total quality management … lean emphasizes respect for people, observation, and eliminating waste while adding value. Eliminating unnecessary steps or redundant steps. Thinking of what the customer is willing to pay for.” P7 said that lean training strategies focused on “starting here because our patients' first impression is what happens to them. P8 said, “We are trying to take care of our patients which I consider world class… world class patient satisfaction and once that all comes together you know the end product is a satisfied patient.”

In analyzing the data obtained from the Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS) public website, ABC Hospital outperformed the national average, scoring in 9 of the 10 categories. The scores are derived from patients’ responses to specific questions assessing the care received while a patient in a healthcare facility. During the period of October 2013 through September 2014, ABC Hospital was consistently higher than the national average (Figure 1).

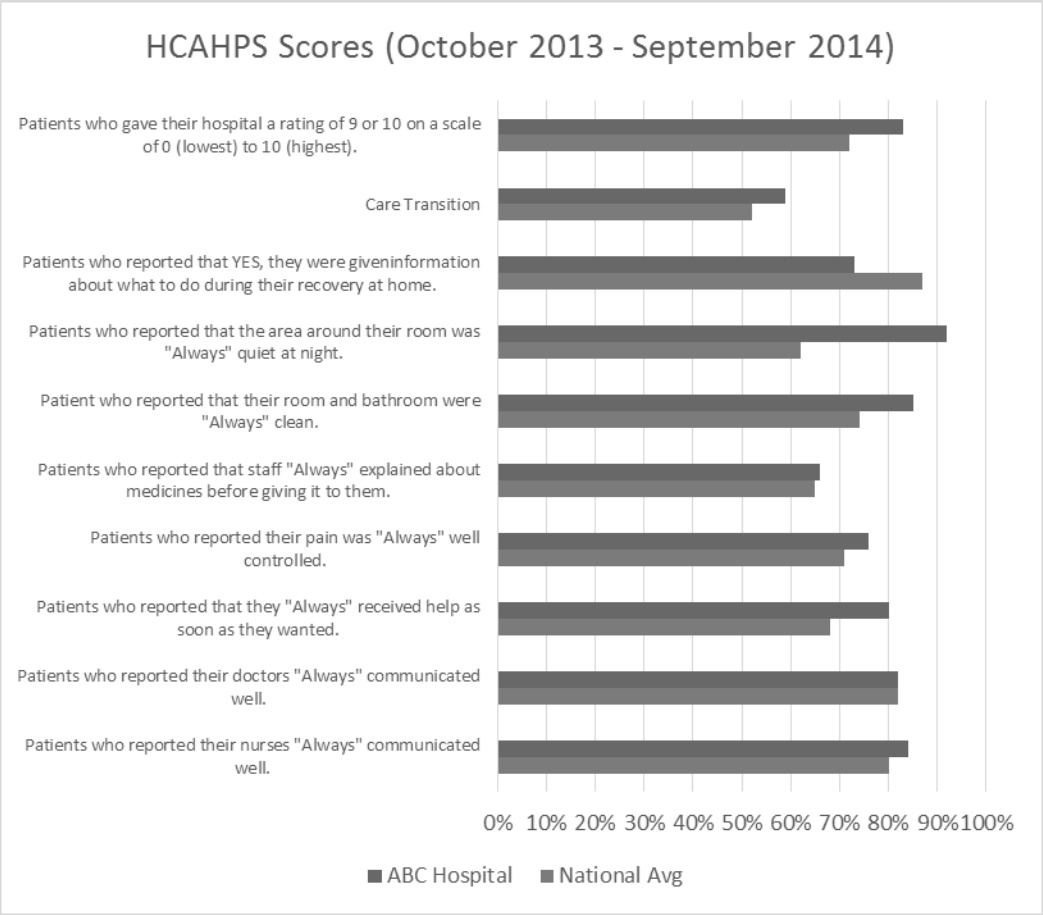

Figure 1. Percentage comparison of HCAHPS scores.

Support. The findings add to the body of knowledge suggesting that, by implementing lean training strategies, it can affect patient care. As the graph depicts, the scores for the ABC Hospital are higher than the national average. The staff noted consistency in processes to alleviate waste and improve patient care and patient safety. The finding is consistent with the previous literature noting a link between patient satisfaction and hospital financials. Critchley (2015) focused on patient-centered care and continuous quality improvements. The finding is consistent with the conceptual framework outlined in the study of general systems theory and high reliability theory.

Patient care in a hospital must be highly reliable. All departments within a healthcare organization work together to provide quality patient care.

Theme 3: Data driven planning and evaluations oriented toward continuous improvement efforts.

Evidence from the findings. All of the participants in the study discussed their reliance upon formal evaluation, assessment, and planning strategies to make lean training strategies successful, as shown in Table 5. For example, data driven planning and evaluations oriented toward continuous improvement efforts. In addition to 83 references to improvement efforts, there were 14 references to plans or the concept of planning, nine references to prioritizing, eight references to evaluations, eight references to continuous efforts, six direct references to data, and five references to assessments. The following excerpts from participants' interview data illustrates the expressed ideas that led to this theme.

Table 5

References to Planning, Evaluations, and Continuous Improvement

Reference	Frequency
Improvement	83
Planning	14
Prioritizing	9
Evaluations	8
Continuous	8
Data	6
Assessments	5

About data, P4 described, "things we did to help collect data …coming up with the solutions and what was the best thing," P3 said, "First and foremost, I look at data, print off what the state requires, the national average, and our average. I ask why we failed that measure [and ask], how can we do different to make us pass that measure?" P1 said, "The processes that we have implemented on the lean in regard to collecting data and the data usually will show if it is making improvement or not." P1 explained, "You go back, you know, make sure the process that you implement is being followed. If not, sometimes you have to start over."

About evaluations, P1 said, "make sure that you do go back and reevaluate the process, look at the value controls, check on the outputs, and make sure the process is

being followed and then reevaluate for results." P5 said, "Lean is a great tool to use to assess the processes and find time saving options as well as cost cutting options. Because you can evaluate the steps and it is a very direct approach." P5 added, "Lean process improvement is an analytical process …assess the different steps of a process… it is very results oriented. You are going to go through it step by step by step and figure out … the best result." P7 talked about, "asking the 5 Whys to get to the real cause of the issue, then develop the target state of what it would look like if fixed, assigning implementation strategy." P7 described the implementation strategy as an account "of who will do what by when, then assigning cost, testing, and evaluating whether or not it is working."

Regarding planning, P1 mentioned the "PDCA cycle… using Plan Do Study Act… that in a small organization is the fastest one we are looking for to make improvement in a process." About planning, P8 said, "we had to be very strategic in planning our space whenever we started the lean concepts." P4 said, "you may know of a best practice and so let's plan on trying that in our organization." P5 said, "I used the Plan Study Do Act (PDSA) a whole lot in assessing things. … we assessed and planned."

About prioritizing and continuous improvement, P1 said, "In regard to the training characteristics of looking at the right process to improve, do you prioritize or is mandated from the top down that you have to implement throughout the year…we prioritize." References to continuous improvement included the following. P2 said, "The next phase of lean training strategies is to create a continuous improvement organization. This phase is perhaps the most training intensive, time involved, and organizational

committed of all the implementation phases." P4 talked about "continuous improvement… to improve processes."

Support. The participants shared that planning and evaluation of continuous improvement efforts such as lean are crucial to successful implementation. Planning is necessary when implementing process improvement. The finding is consistent with Jehanzeb and Bashir (2013) who noted to implement organizational transformation the leaders and staff of the organization need training. Naik et al. (2012) noted that organizational leaders use strategies to address process improvement. The finding is consistent with the conceptual framework outlined in general systems theory that addresses an interlinkage among process improvement and planning and evaluation.

Theme 4: Development of model applications through trials and incremental steps.

Evidence from the findings. All of the participants referred to different perceptions about lean training models. As shown in Table 6, there were 28 references to training models in the data. Trials and incremental steps in lean training emerged from the data, discussed 44 times by the participants in this study. The ideas expressed pertained mostly to testing and refining a lean training strategy before implementing on a wider scale. The ideas related to development included developing reports, leading to the development of teams and organizational training model applications, and developing the culture, target states, and tools.

Table 6

Development of Lean Training Model Applications

Reference	Frequency
Training models	28
Trial, Incremental, Steps	44
Development	14

For example, instead of implementing lean training processes throughout the entire organization, P1 said, “When we start training staff on lean processes, we have to be selective and train staff in strategic locations throughout our organization.” P2 said, “Typically, the lean training strategies start with basic systems that can easily be launched at various organizational levels.” P4 said, “We would trial the different process… determine how long of a trial we would want, put the trial in place and then study our results.” P4 continued to explain, “If that worked…we would move on to one or two nursing units and do it in small increments or we may decide that we would spread out everywhere all at the same time[or] see how that works and then we can replicate that in other areas and spread that learning. P7 said, “The lean training model used at our facility seems to work well. We talk about it, then do some hands-on exercises to reinforce and demonstrate the lean tool or concept.” P8 said, “You try to perfect each model or each area where all the teams have the same goal.” P8 added, “I looked at all

the policies and procedures and how they were currently doing things, then from there I started making notes about possible improvements before we even launched."

Support. The findings revealed that participants were inconsistent with responses regarding lean training models, but were consistent with the learning model of continuous process improvement. The learning model would include planning, implementation, evaluation, and production of the new process using standard work. The result was unexpected and training on the methodology of lean could prove valuable. As noted by Otto (2012), organizational leaders adopt and recognize the value in moving from traditional organization model to a learning organization model. Zairi (2013) adopted the understanding that in order to make improvements to quality, management and staff become engaged in training, using standard work, and a structured approach to quality control, quality improvement, and quality planning. The finding is consistent with the conceptual framework of general systems theory that all aspects of an organization are interrelated and should work as a system.

Theme 5: Extensive leadership-driven policy development and communication efforts.

Evidence from the findings. Successful lean training strategies begin with extensive leadership-driven policy and procedure development, along with the communication by leadership to staff about those policies and procedures. As shown in Table 7, there were 16 references to policies, procedures, and policy development in the data. There were an additional 10 references to communication and communication of

those lean training strategic policies. Eight references to leadership support of communication efforts related to policies and procedures.

Table 7

Leadership-driven Policy and Communication

Reference	Frequency
Procedures and policy development	16
Communication	10
Leadership support	8

About communication, P1 said, “have to have the ability to communicate the process to their coworkers in a simplistic fashion so that staff can understand it.” P8 said, “It is great to have good communication, but when you talk about sharing information, that is part of the teaming model.” P8 added, “I remember whenever I first came here everybody was talking about communication was a problem…we would always talk about sharing information.” About the development of policies and procedures, P5 talked about, “putting it [lean training strategies into policy/action.” P8 mentioned the importance to “those strategies of observing, reviewing, and developing the policies and procedures.”

About leadership involvement, P3 said, “Your group leader(s) …they need to be energetic into the project. Then, they need to be able to capture the buy-in. So, they need to be more for it as well…for successful process improvement.” P4 said it was important

to "train leaders and coaches and then implement training across the organization in a systematic fashion. I believe that the leadership does support lean… I just don't think they realize what is involved in making it happen." P7 claimed, "You must have a leader who is familiar with the concepts and can execute the steps."

Support. The findings indicated that lean training strategies begin with leadership-driven policy and procedure development. This finding is consistent with a previous study by Hummel (2016) that showed process changes systematically implemented along with standard operating practices assist in staff adoption. By encompassing systems, policies, and training, the workforce readily maintains the adoption. The finding is consistent with the conceptual framework outlined by the general systems theory that denotes interconnectivity among all levels within an organization.

Theme 6: Commitment, teamwork, and collaboration.

Evidence from the findings. The idea of commitment and buy-in of staff at all levels of the organization was prominent in the data as a successful lean training strategy. As outlined in Table 8, there were an additional 65 references to teams, teamwork, groups, and collaboration concepts. Eight references to commitment were in the data. The expression of commitment by participants in the study included the idea of buy-in, which emerged from the data from 12 references.

Table 8

Commitment, Teamwork, and Collaboration

Reference	Frequency
Team(work), group(s), collaboration	65
Buy-in, bought-on	12
Commitment	8

For example, P3 said, "you've got to get the group to buy in…get on one accord." Participant 6 suggested that leaders ask, "Do they seem to buy in to the information?" P8 said, "Getting management to buy in to the lean concepts. … some managers that will say well I would like to do that but … hopefully come back with information to get them to buy in to the program." P8 added, "Once we got them kind of bought on to the program, everybody started getting interested in it." About the related concept of commitment, P2 said successful lean training requires, "commitment at the highest organizational level… the commitment in an organization from top to bottom." P5 emphasized honesty in communication and teamwork, stressing "team building skills because we had to work closely together and be totally honest with each other to actually create process improvement."

The following excerpts illustrate participants' collective thought about teams and teamwork. P3 said, "it is usually a consensus from the team … we develop the team …we implement the team and go through the steps and what each step is going to look at and

as we go along we train." P4 said, "As we implemented teams to work on a process, we use the lean methodology then we provide an overview of lean to the group." P4 continued to talk about, "the history and culture of process improvement and teamwork we have used for years. It wasn't strange for them to have teams and people be involved in teams and get their opinions too." P8 emphasized, "sharing information always gets more attention than when you start saying we need to communicate this way… when you've got all the teams working together. Each team has a common goal. … team sharing information that affects this team."

Support. The findings exposed the idea of commitment and buy-in of staff at all levels of the organization was prominent in the data as a successful lean training strategy. The finding is consistent with Martin et al. (2014) that emphasized the benefits to organizations that exude employee peer support, learning motivation, management support, and employee mentoring in the workplace. The finding is consistent with the conceptual framework outlined in general systems theory and the relationship with employees working together toward a common organizational goal.

Theme 7: Hands-on learning opportunities instead of classroom-based settings.

Evidence from the findings. All of the participants in the study expressed opinions that hands-on learning strategies were more ideal than a completely classroom-based lean training experience. As shown in Table 9, there were 17 references to hand-on learning in the data, with 10 additional references to classroom learning. The consensus among participants, expressed in the data, was that hands-on learning was preferable to

classroom learning, although classroom learning was common and did offer some benefits.

Table 9

References to Classroom and Hands-on Settings

Reference	Frequency
Classroom	10
Hands-on	17

Examples of different training models, including hands-on strategies, were offered by P2, who said, "We use a number of lean training …some of which are process simulations, standardization and Kaizen events, and hands-on training with and experienced lean facilitator… hands-on application of the training." P3 said, "I don't think a group of people should be in a room looking at a video learning … you are stuck because you are looking at a video, the video cannot answer questions back. You know it cannot give you an answer back… hands on knowledge to explain it." P4 described "exercises as well as classroom learning lecture type experiences… hands-on exercises … lot of coaching side by side with people as they are doing the process improvement…the hands-on while working on a team." P5 said staff attended, "webinars and that is one way most of the staff have received their training in lean. Some of them have gotten to go to workshops but the majority of the staff has been webinars… I would have gotten more from a hands-on workshop." P6 said, "We had to train people by videos

and some hands on while working." P7 talked about, "hands-on training and the classroom style learning… it is better to train while doing a project. The staff seem to comprehend it better while working on a project… staff seem to comprehend the training when it is hands-on."

With more references to classroom learning, P1 said, "staff does not see a benefit of wasting time sitting in a classroom learning this." P1 added, "If we could teach it in the actual workplace, so they can see it as they perform their daily duties versus in a classroom setting, I think it would be easier and more on the job training." P2 said, "The classroom type training does not help staff to adopt the full results of lean training principles. Actually on-the-job or floor drives the principle deep in the existing culture and works well." P4 described classroom learning as a part of "lecture learning" and suggested "models are those that provide hands on exercises … really rooted in the scientific problem-solving methods that have been around for years…the hands-on exercises." P7 said, "we have tried the hands-on training and the classroom style learning… I have found that it is better to train … when it is hands-on."

Support. The findings based on the experiences of the participants showed that hands-on learning strategies were superlative than a completely classroom-based lean training experience. Andersen et al. (2014) claimed that lean strategies are most effective when capable leadership provides effective training with involved healthcare workers and the use of team processes. Participants preferred the hands-on model of training versus the classroom model. In some cases, it was a blend of hands-on and classroom learning. This finding is consistent with a previous study by Hummel (2016) that used hands-on

training as the learning model. The finding is consistent with the conceptual framework outlined in general systems theory links all systems within an organization.

Theme 8: Training the Trainers.

Evidence from the findings. There were specific references to the successful strategies involved with training the trainers who implement lean training strategies. As shown in Table 10, these references included trainers (three references), coaches (six references), facilitators (seven references), and teachers (11 references). Participants all expressed the idea that successful lean training strategies start with proper training of the lean strategy trainers. In most cases reported for this study, exemplary or informed staff are the individuals that serve as lean trainers in the organization.

Table 10

Training the Trainers

Reference	Frequency
Trainer	3
Coach	6
Facilitator	7
Teacher	11

For example, P3 said, “lean training for staff is that we had two representatives that would take a lean training. They learned it and they came back and it was sort of like train the trainer.” P3 emphasized that, “the training of selected staff is rolled out

concurrently (employee, supervision, and management) to develop organization training." P2 talked about, "experienced lean facilitators…By venture of the higher educational requirements of staff members in their related jobs, they become the main lean trainers." P2 added, "Staff members are usually sent away to seminars, workshops, offsite development organizations specializing in lean training. Some staff members obtain the …level certifications in order to implement the programs and training." About training trainers, P4 said, "it might be best accomplished by contracting an outside company with proven experience to train leaders and coaches." P4 said, "the facilitator needs to be more knowledge of the training themselves or should bring in someone else." P4 claimed that facilitators should "be able to explain it without having to go to a book to look it up or read over it in the presence of others. I think the trainer should be more prepared when they are training someone." P7 shared similar sentiments by stating, "You must have a facilitator or a leader who is familiar with the concepts and can execute the steps. If you don't have an instructor that really knows the process it can be a bit awkward."

With regard to training trainers, P4 discussed "holding a day retreat… again using slides, videos, lectures, games, and exercises, the coaching and then a little bit of it is incorporated into our orientation of new employees." About coaching, P8 said, "My managers coach they don't dictate … never refer to them as their managers and you don't even hear that in the lean world." P8 added, "You know who they are, you respect them but you are a part of the team and you are their coach basically."

Support. The findings revealed specific references to the successful strategies

involved with training the trainers who implement lean training strategies. This finding is consistent with a previous study by Padgett (2014) that noted training as an emerging theme. Downey et al. (2012) defined training as a way to improve workflow and reduce errors within the healthcare environment. Lukewich et al. (2015) noted that within a complex system such as healthcare, training on patient safety is of the utmost importance. Aebersold and Tschannen (2013) noted that if healthcare staff receive training to reduce inefficiencies, mistakes are less likely to occur. The findings are consistent with the conceptual framework as outlined by the high reliability theory that addresses patient safety in the healthcare environment.

Summary of Thematic Findings

The findings indicate that healthcare managers trained in lean training strategies can affect inefficiencies in processes, improve patient care, and reduce escalating costs in the healthcare environment. Lean training in the formal sense can cost a significant investment of money and time. Although lean training may eventually cut costs, the focus should be on improving the quality of patient care. The eight major emergent themes were (a) significant investment of time and money; (b) focus on improving quality of patient care; (c) data-driven planning and evaluation; (d) development of model applications; (e) extensive policy development and communication efforts; (f) commitment, teamwork, and collaboration; (g) hands-on learning; and (h) train the trainers. The lean training strategies developed and applied in incremental steps throughout the organization could have a positive impact on an organization.

Linkage of findings to the conceptual framework. The conceptual framework that formed the basis of this study was the general systems theory. The healthcare environment, a high-risk and open system, was the setting for the study. Suter et al. (2013) noted that general systems theory addresses complex, interdependent systems such as organizations, schools, or hospitals. Shang and Wu (2013) used the general systems theory to explain the interrelation or linkage between entities. There are inputs and outputs associated with the open healthcare environment. Healthcare managers make decisions that influence patient care, staffing, and general business within the healthcare environment (Cordon, 2013).

I applied the general systems theory and identified strategies healthcare managers use to successfully implement lean training. The findings of the study identified strategies that are interrelated and associated with patient care, staffing, and general business. The findings address the financial impact, patient care, data-driven planning and evaluation, models, policy development and communication, teamwork, hands-on learning, and training human resources. The relationship of the findings to the general systems theory can be associated with inputs and outputs within the healthcare environment. Burris (2013) used general systems theory in a study to address whether or not healthcare leaders perceived systems theory and organizational learning as factors in strategic effectiveness. The healthcare environment of a rural hospital was the setting for the Burris' study and this study. The understanding of the basic principles of systems theory and the interrelationship with organizational learning were the essential elements in the study (Burris, 2013).

Linkage of findings to existing literature. The findings of the study link to the existing literature and the emergent themes. Concerning the theme of investment of time and money for lean training, this finding is consistent with a previous study by Lawless (2016) that showed Motorola invested in education and training of staff that resulted in significantly higher savings for the organization. The findings relate to improving patient care and are consistent with literature noting a positive link between patient care and patient satisfaction. Critchley (2015) focused on patient-centered care and continuous quality improvements. Regarding the theme of planning and evaluations, planning is necessary when implementing process improvement. This finding is consistent with Jehanzeb and Bashir (2013) who noted to implement organizational transformation leaders need training as well as frontline staff. Concerning the theme of model applications, the results showed the participants were inconsistent with responses regarding lean training models. This result was unexpected and showed communication and the understanding of lean is inconsistent throughout the organization. As noted by Otto (2012), organizational leaders adopt and recognize the value in moving from traditional organization model to a learning organization model. Regarding the theme of policy development and communication, it is consistent with a previous study by Hummel (2016) that showed process changes systematically implemented along with standard operating practices assist in staff adoption. Considering the theme of commitment, teamwork, and collaboration, this finding is consistent with Martin et al. (2014) who emphasized the benefits to organizations that exude employee peer support, learning motivation, management support, and employee mentoring in the workplace.

The findings of this study noted hands-on learning and consistency with the study by Hummel (2016) who used hands-on training as the learning model. Concerning the theme of train the trainers, this finding is consistent with a previous study by Padgett (2014) who noted training as an emerging theme. Downey et al. (2012) and Lukewich et al. (2015) noted that within a complex system such as healthcare, training is important. Overall, the findings related to the emergent themes and were consistent with the existing literature.

Applications to Professional Practice

The results of the data analysis from this study provides extensive insight for organizational leaders to implement lean training to combat escalating costs in healthcare facilities. The insight gleamed from healthcare managers participating in this study have outlined strategies that have proven effective in the rural healthcare setting. The findings are applicable within the healthcare environment. As noted by Kumar and Blair (2013), healthcare leaders know inefficiencies exist within the healthcare industry. Healthcare organizational managers could reduce business costs through efficiencies and process improvement (Holden et al., 2015; McLaughlin et al., 2014). Kaplan and Witkowski (2014) noted that these inefficiencies add to healthcare costs. Healthcare staff can affect business practices positively once trained in lean thinking principles to problem solve. Poksinska et al. (2013) and Hlubocky et al. (2013) agreed that the elimination of waste from processes could affect business practices positively.

Implications for Social Change

The findings indicate that there can be improvements to the healthcare systems that lead to better patient outcomes, which can lead to a healthier population accompanied by the social benefits, such as improved work performance and socioeconomic well-being of a healthier workforce. The implication for positive social change includes the potential to improve job satisfaction and lower job stress that can lead to lower turnover and better health care within the community that impacts the economic impact of employed individuals. Improved job satisfaction and reduced waste in hospitals lead to lower costs, fewer inefficiencies, improved quality care, and a safer healthcare environment for the citizens in the community.

Recommendations for Action

The study findings indicate that action steps could prove beneficial for organizational leaders of rural healthcare facilities to implement lean training strategies to combat escalating costs. The recommendations flow logically from the conclusions and contain action steps. The recommendations for action include the following: (a) identify organizational resources to include both time and money to implement lean training; (b) focus on lean training that could improve quality patient care; (c) develop and apply lean training strategies in incremental steps before spreading throughout the organization; (d) develop organizational policies and communicate strategies related to lean training; (e) provide the needed commitment from leadership which will lead to teamwork and collaboration among staff; (f) develop hands-on activities to engage the staff in lean training; (g) implement lean training strategies by reviewing and planning as a result of

the data; and (h) provide extensive training to the trainers, so that the trainers can relay the information in a confident and coherent manner to frontline staff performing the work. Organizational leaders not only in healthcare but also in other industries could benefit from successful strategies utilized to implement lean training. Disseminating the results of the study through training sessions and networking conferences among healthcare managers and organizational leaders could disperse the strategies on a local as well as national level. Best practices are generally shared during conferences and training sessions.

Recommendations for Further Research

The purpose of this qualitative case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. The population of this study was the eight healthcare managers in a single rural hospital in Tennessee who have successfully implemented lean training strategies to address increasing costs. The focus of the findings related to how healthcare managers in a rural hospital implemented lean training to combat escalating costs.

There were two limitations identified in the study. Brutus et al. (2013) and Simon (2011) stated that limitations are the weaknesses of the study. The two limitations identified in the study include the geographic location of participants and sample size. Noted below are the recommendations for further research.

1. I recommend that additional research could focus on larger urban or city healthcare facilities utilizing a multiple case study approach versus the single case study approach within a different state.

2. In addition, there was a limitation of the geographic locations of participants. Since I was not geographically near the participants, I relied on telephone interviews. Face-to-face interviews might prove more valuable than telephone interviews because one would be able to view facial expressions or nonverbal communication of the participants in a face-to-face setting.
3. Another limitation identified for this study was the sample size. Adjusting the sample size for larger facility could impact the results. The study could have a different outcome by utilizing a larger sample size.
4. The focus of this study was on healthcare managers. If the focused population was different, the outcome could also be different. One of the findings of this study included an emergent theme regarding cost and time. C-suite executives control budgets for organizations. Therefore, C-suite executives' perspectives' as a different population could be interesting to explore concerning lean training. The results could be different if the number of years organizational leaders in a facility have been involved with lean training and lean methodology were extensive such as 10 years or more.
5. If a facility has implemented lean training for a longer timeframe, it would be reasonable to believe that extensive policy development, model applications, and data-driven planning strategies would be in place which were themes that emerged from this study. Therefore, policy development,

model applications, and data-driven planning strategies could be the focus of continued research efforts.

Reflections

Throughout the doctoral program, I believed that I could finish this journey. It is with perseverance that all things are possible. I now have an understanding of lean training and how individual employees and leaders within an organization must work together toward a common goal. Employees within a department or area of an organization must understand their relationship to the mission of the organization and how their role assists organizational leaders achieve the mission.

The doctoral process increased my mental model of how to immerse oneself in a topic by reading, questioning, analyzing, and concluding with an answer to an overarching research question. I found out rather quickly that data collection is time-consuming. As the researcher, I planned on a focused timeframe for collecting and analyzing data, but I was on the timeframe of the participants engaging me to participate in the study. Therefore, the timeline for participants to identify the agreement to participate may affect data collection timeframes. Overall, the process is an eye-opening experience.

Conclusion

The purpose of this qualitative case study was to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs. I performed semistructured interviews with eight healthcare managers to collect interview data and conduct member checking to ensure the accuracy of the interpretation. I

gathered public documents concerning the organization as additional data to utilize in methodological triangulation. The achievement of data saturation occurred when no new themes surfaced from the data. After analyzing the data, eight major themes emerged including (a) significant investment of time and money; (b) focus on improving quality of patient care; (c) data-driven planning and evaluation; (d) development of model applications; (e) extensive policy development and communication efforts; (f) commitment, teamwork, and collaboration; (g) hands-on learning; and (h) train the trainers. I analyzed each theme to the existing body of knowledge on the topic and the general systems theory used to address complex, interdependent systems within facilities such as hospitals. The study findings reveal that the efficient implementation of lean training strategies in a rural hospital can reduce waste, improve the quality of care to patients, and combat escalating costs.

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Appendix A: Interview Protocols

The interview protocols will consist of the steps outlined below.

1. Thank the participant for taking time to participate.
2. Refresh the participant of the title and purpose of the study.
3. Notify the participant that their responses will be confidential and that they may withdraw at any time.
4. Remind them of the informed consent form and the estimated timeframe for the telephone interviews.
5. Inform them that the interview will be recorded.
6. Conduct member checking by sending them a one or two-page summary of the interview to make sure I have documented the responses correctly.

Appendix B: Interview Questions

1. What lean training strategies did you utilize to combat escalating costs?
2. What are your experiences regarding lean training for staff?
3. What are your perceptions related to lean training model(s)?
4. What training characteristics result in successful process improvement?
5. What strategies have you used to train staff in the organization?
6. How would you describe lean process improvement?
7. What is your experience in using lean principles to improve processes?
8. What other information would you like to share?

Appendix C: Letter of Invitation

Rose Bailey, MBA, BS
Walden University DBA Student
[redacted]
rose.bailey[redacted]

[Insert date]

[Healthcare Manager Name]
[Healthcare Manager Address]
[City, State, Zip code]

Dear Healthcare Manager:

My name is Rose Bailey, and I am a doctoral student at Walden University completing my research study entitled Exploring the Process of Lean Training in the Healthcare Industry. I am looking for healthcare managers who would be willing to participant and respond to eight questions related to your experiences on the topic. The interview will range from 30 minutes to an hour.

You may participate in the study if you meet the following requirements:

- You serve as a healthcare manager in a Tennessee rural hospital.
- You possess knowledge of lean training strategies.
- You have implemented lean training strategies to combat escalating costs.
- You possess at least two years of leadership experience in the healthcare field.
- You are fluent in reading, writing, and speaking English.

Your participation in this study is voluntary. I will respect your decision if you choose not to participate. If you chose to participate in the study, you will receive an electronic copy of the informed consent form containing the following information: a) explanation of the purpose of the study, b) discussion of confidentiality, c) types of information collected, d) explanation of who will view the information, e) description of the interview process, f) expected time commitment for study involvement, g) expectation as participant, h) identification of any risks and benefits associated with this study, i) privacy assurances, and j) the option to withdraw from the study at any time by notifying the researcher. With your consent, I will ask you questions and audio record the interview. The results of this study may be published, but your personal information will remain confidential and will not be disclosed to anyone. I plan to share the results from the study with you and the healthcare industry.

If you agree to the terms of the informed consent form, you will keep one copy for your files and reply to the e-mail with the words *I consent* acknowledging your agreement to participate in the study according to the terms of the informed consent form.

Your participation in this doctoral study can make a difference for the healthcare industry in Tennessee.

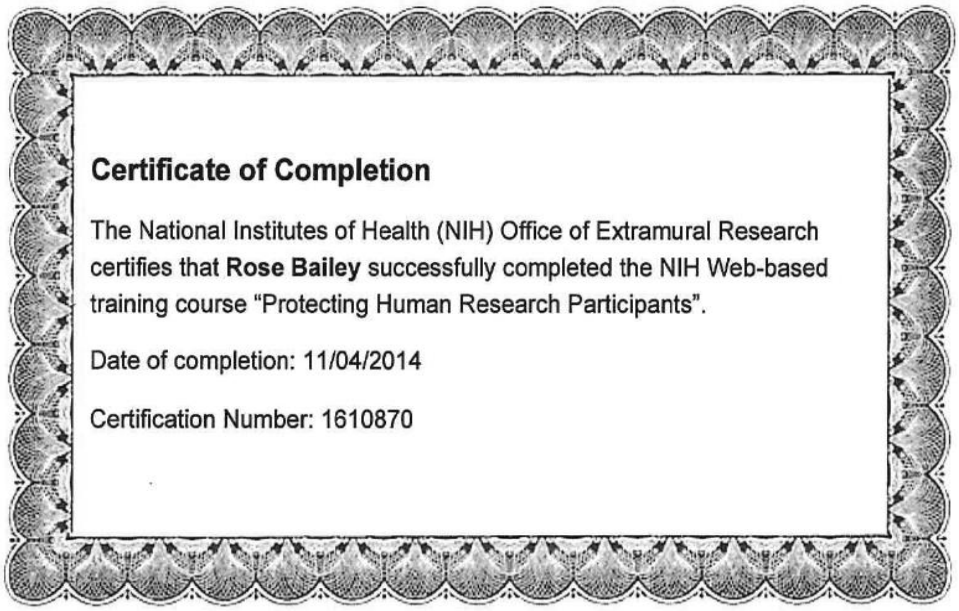
If you decide to participate in this study, you may contact me via e-mail at rose.bailey[redacted] or by telephoning me at [redacted].

Thank you for your time and consideration to voluntarily participate in this study.

Sincerely yours,

Rose Bailey, MBA
Doctoral Candidate, Walden University

Appendix D: Certificate of Completion



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Rose Bailey** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 11/04/2014

Certification Number: 1610870

Appendix E: Document Review Protocol

Purpose: The purpose of this exploratory qualitative case study is to explore how healthcare managers successfully implemented lean training strategies to combat escalating costs.

Research question: What lean training strategies do healthcare managers need to combat escalating costs?

I will be reviewing the Hospital Compare website that denotes the quality results for hospitals. The information outlined on this website is public information. I am asking questions of healthcare manager to explore lean training strategies. The responses gathered from the interview questions will explore themes or strategies that healthcare managers utilize to combat escalating costs.

Website Document:

Time Analyzed:

Date:

Theme:

Strategy: