

2017

# Strategies Used by Manufacturing Hiring Managers to Recruit Skilled Workers

Cheryl Fouchious Brown  
*Walden University*

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# Walden University

College of Management and Technology

This is to certify that the doctoral study by

Cheryl Fouchious Brown

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Walden University  
2017

Abstract

Strategies Used by Manufacturing Hiring Managers to Recruit Skilled Workers

by

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MBA, Kaplan University, 2010

BS, Kaplan University, 2008

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

May 2017

## Abstract

Leaders in manufacturing industries are increasingly concerned with the lack of skills among applicants, emphasizing the gap that exists between employer expectations and skills of employees entering the workforce. Developing successful recruitment strategies is critical for hiring managers seeking to hire skilled workers. The purpose of this qualitative single case study was to explore successful strategies hiring managers used to recruit skilled production workers at a manufacturing company in Southeastern South Carolina. The human capital theory, which represents the knowledge individuals provide to enhance productivity, was the conceptual framework. Data were collected from face-to-face interviews with 3 hiring managers and an exploration of company documents that included the standard of quality and excellence policy, the company handbook, and the company website. Data analysis included assessment of word frequencies, keyword coding, and theme identification. Four themes emerged: provide industry and education partnerships to enhance recruitment efforts, maximize community industry specific recruitment, offer computer numerical controlled training as a recruitment incentive, and provide market competitive compensation. By implementing these strategies, managers may have greater levels of success in hiring skilled workers. Implications for positive social change include the potential for manufacturing hiring managers and other industry hiring managers to recruit and retain skilled workers through training, advancement opportunities, and compensation commensurate with employees' skills. Skilled workers may increase organizational productivity and profitability, which may promote economic prosperity in the local community.

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## Dedication

I dedicate this degree to my Lord and Savior Jesus Christ. Without you, I am nothing, but with you, I am unstoppable. To my children, Andrea, Tiffany, Larry (Pooh), and Teanna, you made this journey possible. To my sisters, Elaine and DeeDee, I love you thank you for your support. To my mother, France, and my brother, Kenny, for giving up months of your lives to assist with the care of Tiff so that I could achieve my goal. To Adam, thanks for our morning walks. To my wonderful grandchildren, I love you for sacrificing so many of our fun weekends. To Dana for believing in me and encouraging me to believe in myself. I am eternally grateful to each of you. I dedicate this degree to those who have gone before me and those who will follow; keep swimming. Finally, I dedicate this work to the memory of my father and brother, Walter Anton Fouchious, Sr., and Walter Anton, Jr. You would be proud. I love you.

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## Section 1: Foundation of the Study

Advancements in manufacturing technology and the impending retirement of baby boomers have increased the demand for skilled workers (Gordon, 2014; Spak, 2013). The lack of available skilled production workers, such as machinists and operators, negatively affects productivity and market performance (Schied, 2014). The goal of this study was to explore the strategies used by manufacturing hiring managers to recruit skilled employees to meet industry demands.

### **Background of the Problem**

Leaders in manufacturing industries are increasingly concerned with the lack of skills among applicants, emphasizing the gap that exists between employer expectations and the skills among employees entering the workforce (Neumark, Johnson, & Mejia, 2013). U.S. business leaders, specifically in the manufacturing industry, have expressed concerns about the lack of skills among potential applicants. Gordon (2013) noted that baby boomers, who constitute the largest demographic segment of the United States, are retiring at a rate of 10,000 per day, with the expected retirement of 70 million by 2020 (Hotchkiss & Rios-Avila, 2013). Eighty-two percent of employers reported a critical lack of skilled production workers, and 75% of employers stated the skills shortage has negatively impacted their company's ability to extend and develop new products or services (Spak, 2013). Among companies facing or anticipating a skills shortage, 66% predict a loss of business to competitors, 64% face a loss of revenue, 59% face eroding customer satisfaction, and 53% face delays in developing new products or services

(Bradley, McMullen, Artz, & Simiyu, 2012). The lack of skilled employees creates a deficiency of trained workers and lowers productivity (Poddar & Madupalli, 2012).

### **Problem Statement**

The United States is the third largest exporter of manufactured goods (Spak, 2013), yet 82% of manufacturing companies report a shortage in skilled workers (Cappelli, 2014). Spak identified 600,000 vacant manufacturing jobs because employers are unable to recruit workers with the skills to meet the organization's needs. The general business problem was that some manufacturing hiring managers were affected by the lack of qualified workers, which resulted in the loss of productivity for the business. The specific business problem was that some hiring managers lack strategies to recruit skilled production workers.

### **Purpose Statement**

The purpose of this qualitative single case study was to explore the strategies that hiring managers used to recruit skilled production workers. The population for this study included hiring managers from a manufacturing company in Southeastern South Carolina who have developed strategies to overcome recruitment challenges. Industry leaders could use the findings of this study to develop strategies for hiring managers to use to recruit and hire skilled production workers. The findings from this study could affect social change by informing the business community about the strategies for hiring skilled employees to meet industry demands, which could increase productivity and profitability. By maintaining profits, the business may sustain operations in the community and contribute to the prosperity of the employees, the community, and the economy.

### **Nature of the Study**

I used a qualitative methodology for this study. The qualitative method involves subjectivity to understand a phenomenon (Erlingsson & Brysiewicz, 2012). Qualitative researchers gather rich data through direct contact with participants (Yin, 2014). A quantitative method was not appropriate for this study because the goal was to explore the strategies of hiring managers. The quantitative method involves numerical measurements and statistical analysis and does not include instrument-based questions (Lach, 2014). The mixed-methods approach includes qualitative and quantitative data to support personal observations and test developments (Daigneault & Jacob, 2014). The purpose of this qualitative study was to explore successful recruitment strategies of manufacturing hiring managers; therefore, I selected qualitative methodology.

I used a single case study design. Case study research provides a level of flexibility not offered in other qualitative designs such as phenomenology. The case study design is used to explore the case and answer the research question (Hyett, Kenny, & Dickson-Swift, 2014). Simons (2015) noted how the case study design is used to describe the perceptions of participants through interviews, observations, and the analysis of relevant documents. Other qualitative designs that I considered were ethnography, phenomenology, and narrative inquiry. Ethnography was not suitable for this study because it focuses on culture, community, and meanings of relationships of people (Cayla & Arnould, 2013). The main objective of the phenomenological design is to study the lived experiences of individuals living the phenomenon (Finlay, 2013). Exploring lived experiences was not my intent in this study. The narrative inquiry involves a constant

process of negotiation between the researcher and the participant to validate a story through personal, social, and political inquiry (Wang & Geale, 2015). I did not select the narrative inquiry for the study. A case study design was the best design for exploring hiring managers' successful strategies to recruit skilled workers.

### **Research Question**

What strategies do hiring managers use to recruit skilled production workers?

### **Interview Questions**

1. What strategies did you use to recruit skilled production workers?
2. What strategies did you use to mitigate the challenges due to the lack of skills?
3. What strategies did you use to determine which positions were most affected by the skills shortage?
4. What strategies did you use to address the skills shortage resulting from retiring production workers?
5. What strategies did you use to evaluate relevant work experience that you needed in your organization?
6. What strategies did you use to mitigate outsourcing to fill vacant positions?
7. What strategies did you use to assess the skills needed to ensure an adequate supply of skilled production workers?
8. Is there anything else you would like to discuss regarding strategies used to hire talented and skilled workers that I have not addressed in the interview?

## Conceptual Framework

The conceptual framework that guided this study was the theory of human capital, which draws on competence, knowledge, skills, experience, and innovativeness possessed by individuals to promote business competitiveness (Boujelbene & Affes, 2013). Becker (1994) stated that human capital refers to skills and characteristics that increase productivity and business earnings. Chahal and Bakshi (2014) defined human capital as a method to improve an organization's productivity, performance, and competitiveness. Gamerschlag (2013) provided a clear distinction between human capital and an organization's value and long-term sustainability. Kucharcikova (2014) discussed two approaches to human capital: macroeconomic and microeconomic. The macroeconomic approach considers human capital as a foundation for economic growth through skills, knowledge, and experience. The microeconomic approach addresses human capital as the basis for production, further indicating a manager's perspective of human capital as intellectual capital that forms a company's worth (Kucharcikova, 2014).

Human capital affects a company's performance level; aligning skills to an organization can provide a competitive advantage (Khanna, Jones, & Boivie, 2014). Khanna et al. (2014) noted the theory of human capital refers to the difference between the expected skills needed and the actual skill set of the worker as the main reason for the existence of the skills gap. I applied human capital theory to this study because of the value of human capital to increase a firm's productivity, performance, and innovation (Kato & Okamuro, 2014).



## **Operational Definitions**

*Employability skills:* A group of essential abilities that involve the development of a knowledge base, expertise level, and mindset that is increasingly necessary for success in the 21<sup>st</sup>-century workplace. Employability skills typically are considered essential qualifications for many job positions, and these skills have become necessary for an individual's employment success at almost any level within a business environment (Tsai, 2013).

*Human capital:* The combination of knowledge and skills within the workforce that represents an economic resource of an organization to generate future income streams (Fulmer & Ployhart, 2014).

*Intangible assets:* The combination of human capital, intellectual capital, and organizational capital to create a firm's competitive advantage (Todericiu & Stănit, 2015).

*Intellectual capital:* The economic value of intangible assets of a company's organizational and human capital (Užiene, 2015).

*Skills gap:* A significant gap between an organization's current capabilities and the skills it needs to achieve its goals. The skills gap reduces an organization's ability to grow and remain competitive because it cannot fill critical jobs with workers who have the right knowledge, skills, and abilities (Speculand, 2014).

## **Assumptions, Limitations, and Delimitations**

Assumptions, limitations, and delimitations are critical components of a study (Leedy & Ormrod, 2012). Assumptions are components of a study presumed to be true

without evidence (Leedy & Ormrod, 2012). Limitations are elements of the study that cannot be controlled (Soilkki, Cassim, & Anis, 2014). By contrast, elements within the researcher's control, such as the population and sample, are delimitations. In this section, I address the assumptions, limitations, and delimitations of the study. I explore the potential weaknesses and areas of concern that could have affected the outcome of the study.

### **Assumptions**

Assumptions in a study are facts of the study not yet validated but accepted as true (Leedy & Ormrod, 2012). I assumed that the populations of hiring managers in this study were appropriate for exploring common themes involving employee recruitment strategies in the manufacturing industry. I further assumed that the hiring managers provided honest and truthful responses during the interviews and that participants provided current and relevant documents related to recruitment strategies. I recorded and analyzed participants' responses and data collected from documents to identify themes.

### **Limitations**

Limitations are potential weaknesses of a study (Brutus, Aguinis, & Wassmer, 2013). The limitations of this study included time constraints that limited the availability of the participants. The second limitation was that participants might have felt uneasy about disclosing information regarding the hiring techniques and decisions made in hiring employees. This discomfort may have caused participants to conceal their strategies for hiring skilled workers. Another limitation was that all participants were from a single manufacturing company in Southeastern South Carolina. Exploring participants'

strategies for recruiting skilled production workers from multiple manufacturing companies may have mitigated this limitation.

### **Delimitations**

Delimitations are factors that limit the scope and define the boundaries of a study (Paechter, 2013). The delimitations of this study included a manufacturing company in Southeastern South Carolina that has hiring managers that have used strategies to recruit production workers. A further delimitation was participants were selected through purposive sampling, which excluded hiring managers in other industries and other types of positions. Findings are not transferable to a larger population.

### **Significance of the Study**

This study is of value to the practice of business because the findings may be useful in the development of successful recruitment strategies for manufacturing hiring managers. The contributions to professional practice provided valuable information for recruiting skilled workers, which may lead to increased productivity for businesses. The implications for positive social change include the potential to provide strategies that manufacturing business leaders can use to improve productivity, which could lead to greater profit.

### **Contribution to Business Practice**

This qualitative single case study may contribute to business practice by presenting strategies used by manufacturing hiring managers to recruit skilled workers. Skills have become the focal point of many businesses, and employers continue to discuss the existence of the skills shortage, which impedes growth and competitive

advantage (DiCerbo, 2014). By addressing the skills gap, this study may help manufacturing decision-makers improve or create strategic plans for recruiting skilled workers, thereby increasing production and sustaining profitability.

### **Implications for Social Change**

The skills gap has an adverse macroeconomic outcome in the manufacturing industry, affecting the ability to remain competitive and sustain profitability because of the inability to fill positions with workers who have appropriate knowledge, skills, and abilities (Neumark et al., 2013). The implications for positive social change include the potential to improve business practices by contributing strategies that will assist hiring managers in recruiting skilled workers, thereby increasing productivity and profitability within the manufacturing industry. Social change implications also include economic development and human capital development leading to higher economic returns.

### **A Review of the Professional and Academic Literature**

The review of literature included an extensive search that began with Walden University library databases: Business Source, Emerald Management Journals, ProQuest, Sage Premier, and the Educational Resource Information Center (ERIC). Additional resources included Science Direct for performance measurement and business performance and the National Bureau of Economic Research for management industry and human capital. I also used Google Scholar. Keywords used for the search included *skills gap*, *skills competencies*, *human capital*, *manufacturing skills*, *knowledge transfer*, *employability*, and *intellectual capital*. The literature review generated 206 sources,

including 180 peer-reviewed sources that satisfied the criterion of 85% published within the last 5 years (2012 to 2017).

The purpose of this study was to explore recruitment strategies of hiring managers to hire workers with the appropriate skills to match manufacturing sector skill requirements. Kochan, Finegold, and Osterman (2012) explained that companies should allow employees to develop new and higher level skills for them to cope with their constantly changing environment. To develop human capital effectively, employers must develop programs to facilitate industry demands (Samoilenko, 2014).

I begin this review with a brief overview of the theory of human capital, the conceptual framework for this study. I also discuss changes to the U.S. workplace resulting from technological innovations and globalization. The review also addresses theories related to the skills gap and evidence of the gap related to supply and demand.

### **Human Capital Theory**

The theory of human capital was developed by Schultz, Becker, and Mincer over five decades ago (Teixeira, 2014). Schultz (1993) identified human capital as an explicit form of capital, a means of production, and a product of investment. Schultz further noted that the investment in human capital is central to economic development. Mincer (1997) related human capital to higher learning and greater lifetime income. Becker and Schultz (as cited in Teixeira, 2014) argued that investments in human capital strengthen the prospect of long-term economic growth.

The theory of human capital as described by Becker (1962) characterizes human capital as resources embedded in people's skills, knowledge, information, ideas, and

health. Schultz (1993) defined human capital as a strategic component of an organization's assets, which is instrumental to increased productivity and sustained competitive advantage. An organization's human capital is an instrument used to increase productivity. Human capital is the basis for innovation and growth of a company; employees with advanced human capital including higher levels of training and education are more productive and provide substantial efficiency leading to a significant outcome (Chowdhury, Schulz, Milner, & Van De Voort, 2014; Jerzak, 2015).

Human capital is the core of a company, adding value and assisting in achieving company objectives (Guo, Xiao, & Yang, 2012). In a study intended to develop a basis for the connection between company success and human capital, Unger, Rauch, Frese, and Rosenbusch (2011) found a significant relationship between human capital and success. Unger et al. established the relationship based on the moderators involving conceptualizations of human capital. According to Muda and Rahman (2015), human capital is the knowledge, skills, and abilities that are the embedded resources of a firm; human capital is a critical element of performance and an intangible resource.

Human capital is an important aspect of economic growth that influences production, labor productivity, and competitive advantage (Brymer, Molloy, & Gilbert, 2014). Tumwine, Nasiima, and Kamukama (2014) conducted a study of 256 medium and 103 large manufacturing companies that revealed a positive correlation between human capital and company performance. Tumwine et al. noted human capital as an important asset to a company's competitive advantage. Becker (1962) and Dittman, Juris, and Revsine (1980) acknowledged human capital as an accentuation of the cost of labor and

return on investment to gain future productivity. Čiūtienė and Railaitė (2015) identified several human capital elements including knowledge, competency, innovation, problem-solving skills, and creativity. Human capital is part of an organization's internal competence (Borrás & Edquist, 2014); organizations acquire internal competencies through employing people who contribute their skills, innovativeness, and education. Enhancements to these competencies occur through training and additional skill building within the organization.

Regarding human capital skills, the relationship indicator was higher for outcomes of human capital investments in knowledge and skills as compared to human capital investments on education or experience (Tsakiris, 2014; Unger et al., 2011). For task-related jobs associated with the manufacturing industry workers, human capital is important for the success of the company (Unger et al., 2011). Daimler-Chrysler human resources managers identified company workers as a function of the organization, noting that the workers' knowledge and skills coupled with customer awareness represented the resources of innovative services (Örnek & Ayas, 2015). Khanna et al. (2014) conducted a study of 5,700 directors from 650 Fortune 1,000 companies to show how human capital relates to a company performance and creates a competitive advantage. Directors with high levels of human capital were better at providing advice and improving firm performance (Khanna et al., 2014).

The success of an organization or company was found to be related to human capital investment (McGuirk, Lenihan, & Hart, 2015). McGuirk et al. (2015) established that human capital related strongly to company performance regarding nonprofit

operational performance measures. Dinda (2103) and Spak (2013) found that companies experienced negative outcomes in their actual earnings compared to their expected earnings due to the skills gap.

When considering a human capital investment for company success, organization leaders should treat employees' success as a central aspect of their operations; considering the productivity and success of employees should be integrated into the strategic planning and development of the company. Managers should focus their resources on programs that increase and retain firm-specific human capital (McGuirk et al., 2015). Human capital is the intangible asset employees bring to an organization (Orth et al., 2015). These assets are unique to each professional's competencies. Koroglu and Eceral (2015) conducted a study of 104 defense and aviation industry employees in Ankara Turkey to examine the relationship between human capital and innovation and impact of human capital on productivity at both the individual microeconomic and the aggregate macroeconomic level. Human capital was the main source of knowledge and skills in innovation, and the macro approach demonstrated the importance of human capital to industry innovation. The results indicated a positive relationship between innovation and human capital in the defense and aviation industry (Koroglu & Eceral, 2015).

The changes to a knowledge-based economy require the intangible resources found in human capital (Todericiu, Lucia, & Stănit, 2014). Todericiu et al. (2014) noted human capital as a tactical asset of a corporation, and it is an integral part of a company's viability and continued growth. Human capital is an intangible asset creating future



benefits, and employers attested to the need for extensive skills to accommodate a complex technical setting (Ganiron, 2013).

To illustrate the link between human capital and the skills gap, Grove, Hussey, and Jetter (2011) focused on human capital and asserted that the skills gap exists based on differences in human capital between individuals. These differences include (a) noncognitive skills, which include assertive negotiating, and (b) education and skills needed for high-paying jobs (Grove et al., 2011). Aligning skills to an organization's objectives can provide a competitive advantage to the organization (Khanna et al., 2014). In line with the theory of human capital, the skills gap is the difference between the actual skill set and the expected skill set of employees (Khanna et al., 2014).

### **Human Capital and Economic Growth**

Human capital is a significant factor in competitiveness and economic growth. Čadil, Petkovová, and Blatná (2014) cited studies that focused on human capital and growth; the finding showed a clear connection between the two. Atalay (2014) noted human capital to be one of the fundamental determinants of per capita income, and Liepė and Sakalas (2014) emphasized the role of human capital in contributing to economic growth and a country's value creation process. Liu, Jaarsveld, Batt, and Frost (2014) showed that the influence of human capital total productivity has an internal rate of innovation, and Pelinescu (2015) found that human capital influences the rate of distribution of technology. Economic growth is dependent on the investment in human capital, which is the most important element in determining a country's ability to innovate (Azizan, 2013).

Human capital is valuable because of the distinctive qualities of an individual, specifically when there are higher levels of skills. Human capital is a significant element in economic development, technology, and innovation, which are the output of human knowledge (Qadri & Waheed, 2013). Sulaiman, Bala, Tijani, Waziri, and Maji (2015) described human capital as the total stock of knowledge, skills, competencies, and innovative capabilities. The growth in per capita production is an essential component of economic stability (Sulaiman et al., 2015). Banerjee and Roy (2014) found human capital to be an important influence on long-term productivity and growth. Su and Liu (2016) conducted a study of 230 large cities in China to explore the role of human capital in economic growth. Su and Liu found a direct and indirect influence on GDP growth through innovation, productivity, and technology which increases economic output.

### **Intellectual Capital**

Intangible resources are a significant asset to organizations' innovation and performance (Inkinen, 2015). The intangible assets in intellectual capital are the knowledge and competencies that can establish an organization's competitive advantage and value creation. Inkinen conducted a literature review and identified human capital as one of the nine dimensions of intellectual capital. Human capital consists of various abilities including skills, intelligence, value, and experience, which are accessible through employees. Human capital was the only intellectual capital dimension that had a direct effect on organizational performance, and human capital was also an influence on the other eight dimensions, signifying a distinct shift from tangible assets to intangible assets that provide capabilities (Inkinen, 2015).

In a study on the banking industries, Chahal and Bakshi (2015) explored the relationship between intellectual capital and a company's innovation and competitive advantage. The authors identified intellectual capital as the output of human capital related to innovation composed of skills and knowledge that facilitates value creation and competitive advantage. Chahal and Bakshi related human capital to an intangible asset of intellectual capital, noting human capital as skills and competencies that contribute to value creation within an organization.

Intellectual capital is the foundation of a company's competitive advantage; companies leverage the knowledge and skills found in human capital to improve organizational outcomes and increase the importance of intellectual capital (Hu, Ke, Guo, & Wen, 2015). Örnek and Ayas (2015) discussed three factors of intellectual capital: (a) human capital, (b) structural capital, and (c) customer capital. Both structural and customer capital exist within the dimensions of firms' productivity and outcomes; for the purpose of this study, the focus was on human capital, which is the combination of technical knowledge, education, competencies, qualifications, and skills. Human capital refers to employees' ability to apply their accumulation of knowledge to increase productivity (Benos & Karagiannis, 2016).

The intellectual capital found in human capital has a positive effect on organizational performance, financial returns, and sustainable competitive advantage (Hu et al., 2015). Hashim, Osman, and Alhabshi (2015) found a significant relationship between intellectual capital and an organization's performance. Wilson (2013) discussed the changes in supply (skills) and demand (skills needed) and the role of education and

training in workforce preparation, increased opportunities, and skill development. Changes in globalization, technology, and demographics contribute to the need for greater skills (Wilson, 2013). Technology refers to innovation and relevancy, globalization is an outcome of technology consisting of virtual communication and work, and demographics are considered the most significant change encompassing the impact of an aging workforce (Wilson, 2013).

### **The Historical Workplace**

The U.S. workplace has experienced significant shifts. As a result of societal and economic changes, the workplace has evolved from agricultural to industrial to knowledge based. These changes have resulted in several implications for the U.S. worker (Rothstein, 2012). The move from an agricultural society to manufacturing altered the workplace and landscape. Citizens left farm life to pursue positions in city factories. The workplace required physical labor, repetitiveness, and the ability to follow management's directions. Steiger, Hammou, and Galib (2014) described the typical workplace as one that followed a command-and-control approach. Workers engage in tasks that did not necessarily involve comprehension and full understanding and control. Leaders implemented a hierarchical workplace structure in which middle managers passed information from top management to subordinates. This system appeared effective as the U.S. economy prospered for many decades. Jobs were readily available and offered long-term employment, and U.S. industries remained unchallenged by foreign competitors (Steiger et al., 2014).

Foreign competition began to surface in the early 1970s when Japan, once known for cheap, low-quality products, began to emerge as a potentially strong competitor. Other nations followed suit. Noe, Clarke, and Klein (2014) remarked that by the 1980s, it became apparent that production efficiency was no longer enough to maintain competitiveness. Other winners included quality, convenience, timeliness, and price. U.S. companies faced intense competition at home and abroad. By the 1990s, organizations had turned their attention toward restructuring, reengineering, and other innovation practices. Leaders were compelled to rethink management practices, the traditional hierarchal structure, and employee skill sets. As a result, the demand for low-skilled jobs began to decrease. These changes appear increasingly evident in the modern workplace (Noe et al., 2014).

### **The Modern Workplace**

Before the 1980s, the American Management Association described management as working through other people to obtain success (Montana & Charnov, 2011). This definition epitomizes Frederick Taylor's widely practiced approach to managing organizations. Supervisors expected workers to follow instructions and provide little or no input. Managers have learned to maintain a different viewpoint, which involves collaborating with workers to achieve both the individual and organizational goals (Montana & Charnov, 2011). Organizational changes reflect this view, which includes the use of groups and self-directed teams to accomplish organizational goals. These and similar processes deviate from the traditional workplace, which places decision-making solely in the hands of higher management, and with the changes in the manufacturing

industry, blue-collar workers and engineers would require a different way of acquiring knowledge due to advancement in technologies (Montana & Charnov, 2011).

According to Smith (2012), skilled employees experience fewer recurring job assignments, and autonomy, and need to work with individuals at all level of a company. Factors such as globalization, technological innovations, and more mobile and better-informed workers drive massive organizational changes (Epicoco, 2016). The appearance of technology, globalization, and flattening organizational hierarchy act as contributing factors; people no longer work in seclusion. Often, their very jobs depend upon working with and interacting with colleagues at all levels of the organization (Kim, 2015).

As the manufacturing industry transitioned from offshoring to re-shoring, many managers began voicing their fears that the talent they have is not the talent they need (Gylling, Heikkilä, Jussila, & Saarinen, 2015). Schied (2014) noted human resources and managers of organizations of all sizes had experienced talent deficiencies within their employee base. This shortage began nearly a decade ago and has grown stronger. Companies have waged intense recruiting wars for talent while debating the best systems for identifying, selecting, and developing important talent, and they still are not sure of future needs (Alniaçik, Alnaçik, Erat, & Akçin, 2014).

### **Why Manufacturing Matters**

The manufacturing industry has moved from labor-intensive mechanical processes to information-intensive processes (Bonvillin, 2013). Even with the preceding figures, manufacturing remains a major sector of the U.S. economy, at 12.5% of the GDP (Bureau of Economic Analysis, 2012). The manufacturing industry makes up 11% of the

economy and delivers 68% of private sector R&D (Rosell, Lakemond, & Nazli-Wasti, 2014). The industry contributes \$2.08 trillion to the economy and employs 12 million people in a workforce of some 140 million (Ledford, 2014). Manufacturing workers earn 20% higher compensation than workers employed in nonmanufacturing jobs. Growth economists estimate that more than 60% of the U.S. economic growth comes from technology and related innovation, with manufacturing dominating the innovation system (Baily & Bosworth, 2014).

Despite these numbers, both U.S. companies and foreign companies continue to develop effective vocational education and job-training programs. However, the educational attainment of young workers in the U. S. falls behind countries like Canada, Japan, and Korea (Baily & Bosworth, 2014).

### **Theories Related to the Skills Gap**

The cobweb theory essentially served to explain supply and demand that related to pricing and quantity (Kaldor, 1934). Freeman (1976) adapted the cobweb theory to estimate the supply trend of work in technical occupations. Suggesting a time lag exists between supply and demand decisions, creating a gap between the supply and demand quantities. Because of the time lag, the supply adjustment often overestimates and underestimates the long-run equilibrium creating a cobweb-like trend of market adjustment. Relevant to the skills gap, the cobweb theory provided an example of how the labor market (supply) make adjustments related to professions requiring training (demand) that delays labor market entry (Freeman, 1976). Holzer (2012) categorized labor market skills as general or specific. General skills may consist of basics such as

cognitive skill. General skills can also encompass analytical, problem solving and communication. Conversely, specific skills are inclusive of those needed to conduct a particular job required by the employer.

The competence-based theory emphasized the interconnectedness of components of an organization and its success in a dynamic, systemic, cognitive, and holistic manner (Roh, Hong, & Min, 2014). By emphasizing the interconnectedness of the various system elements of the firm, the competence-based theory provided a theoretical framework that can inform more in-depth survey analysis. The competence-based theory suggested that skills gaps serve as a bottleneck to the function of the organization or the company, influencing the elements that can threaten the company as an institution (Schwalje, 2012). The relationship between skills and needs for jobs, knowledge and industry growth and competitiveness were discussed by Consoli and Rentocchini (2015), the authors conducted a study of 290 United States in industries, which found that an applicant's ability to obtain diverse skills is essential to meeting industry requirements.

### **Existence of Skills Gap in the Workplace**

Technology advancements lead to an evolution of the skills needed for manufacturing jobs, emphasizing interactive and cognitive skills in communication and problem solving, and to the traditional, physical-based skill sets (Lawrence, 2014).

In manufacturing companies, research has shown that there is high demand for skilled workers based on the technical and nontechnical skills (Nordin, Nasir, Noordin, & Buntat, 2013). Highly proficient in nontechnical skills is the benefit commonly seen among skilled workers in a challenging and progressive industry; the proficiency of



nontechnical skills is given serious attention for all skilled workers in the manufacturing industry, especially in the industrial sector (Nordin et al., 2013). The importance of skills for industry competitiveness, further noting skills as an integrate component in the ability to accomplish duties (Chryssolouris, Mavrikios, & Mourtzis, 2013).

The three elements of the skills gap include the lack of information on the current job market, the retirement of the workforce, and the lack of skilled candidates; these are the contributors to the skills gap (DaCosta, 2010). The lack of information on the current job market refers to the incomplete information that one has regarding the skill requirements that will match a specific job. The retirement of the workforce contributed to skill gap as retirement lessens the number of skilled workers; and because of lack of qualified applicants with the correct skills set, the skills gap increases (Cairns, 2010; Kochan et al., 2012). The skills gap constitutes the differences between what employers seek and the attributes applicants possess making them hireable, and able to contribute to the productivity of the economy (Velasco, 2012).

In a study to explore strategies to decrease the skills gap, Plöger and Weck (2014) focused on individuals with a higher skill set. Interestingly, among public views, a higher skill set is associated with greater economic and community growth. The correlation of skills, growth and economic sustainability suggests that the lack of skills, in contrast, can contribute to the erosion of economic and population progression. The higher gap in skills is prevalent in cities with a greater decline in population. In moderate cities, with individual leaving immediately after high school, whereas, larger more established manufacturing cities experience a population decline after completing college (Plöger &

Weck, 2014).

The importance of innovation as a measure of new knowledge and skills was discussed by Clark (2014) the finding showed competitive improvements in countries with higher labor expenditure output. ElMaraghy (2014) added that industries that are technology driven offer the United States greater competitive advantage. Economic demands can perpetuate occupational reorganization that can lead to transformations in skills deficiencies for employees in various industries, as the current structure is unable to meet industry demands (Eighmy & Karl, 2010). The National Association of Manufacturers 2005 survey noted that more than 75% of U.S. manufacturers say that an insufficiency of skilled workers results in business production delays. Further citing the difficulties in recruiting highly skilled workers because of the increase in new technologies, creating an inadequate match between the required and actual level of labor inputs to skills (Bednarek, 2014).

The field of physiotherapy is also experiencing a skills gap. Vanhercke, Cuyper, and Peeters (2014) conducted a study to investigate the employers' perceptions of employability skills and competency levels of 45 physiotherapy graduate employees. In a survey to assess the employability skills needed in the workforce findings demonstrated that employers perceived only the following seven items that needed enhancement in the physiotherapy education to address the skills gap. These seven areas are: (a) critical thinking ability, (b) generating hypotheses and linking ideas, (c) applying theory into practice, (d) sharp analytical skills, (e) prioritizing problems, (f) keeping up-to-date on information about the professionalism, and (g) giving clear explanation about problems

and treatments and recognizing the effects of decisions to be made (Vanhercke et al., 2014). Employers identified skills gaps as soft skills, which include teamwork, leadership, and problem-solving (Weedon & Tett, 2013).

Many employers are looking for graduates who possess nontechnical skills such generic skills and employability skills (Jackson & Chapman, 2012). The requirement of nontechnical has ignited concerns of educational systems producing a small percentage of graduates with the nontechnical skills needed for the workforce. Jackson and Chapman (2012) compared and contrasted the finding of an Australian study of 367 business graduates and current skilled workers to assess nontechnical skill and performances (Jackson & Chapman, 2012). The study results indicated a correlation between assertiveness and competence among graduate in some areas of nontechnical skills. However, skills were lacking in areas of management and other generic skill (Jackson & Chapman, 2012). Spak (2013) noted the future success of manufacturing is contingent on a generation of highly skilled, educated workers that are prepared to meet the demands of today's technology-driven industry .

The perspective of the manufacturing industry and higher education challenges in eliminating the skills gap through Massive Open Online Courses (MOOCs) and stackable credentials/credits may have the potential to facilitate United States manufacturing's growth and development that will translate to progress in the United States economy (Spak, 2013). These two learning factors are important to long-term employability in the United States manufacturing workforce while maintaining an acceptable wage level for professionals to fill in the U.S. manufacturing workforce skills gap. The discrepancy

between the need and the available pool of skilled personnel has multiple reasons.

Preenen, De Pater, Van Vianen, and Keijzer (2011) attributed an aging workforce, as well as a lack of challenging assignments, as contributors to the deficit of skilled workers.

Pritchard (2014) predicted that 50% of the demographic labeled Baby Boomers, those individuals born between 1946 and 1964, and may retire by 2018 with the remainder achieving retirement by 2026. The net result will be an excess of 76 million workers leaving the U.S. workforce, which represents approximately 35% of the total U.S. population .

Challenges presented by changes in learning styles found in the workforce supposedly versed in technology (Burch & Strawderman 2014). However, not everyone within this cohort has access to technology adding further complications to the impending turnover between the outgoing and incoming generation of workers. While the size of turnover within the workforce constitutes a major influence, the technology, and generational differences add to difficulties with obtaining sufficient skilled workers (Burch & Strawderman, 2014).

Poaching is one competitor targeting the workers of another as part of a recruitment effort (Lise, Meghir, & Robin, 2016). Sheldon and Li (2013) explored the experiences and responses of foreign-invested enterprises (FIEs) regarding employee poaching and its relevance to the skills shortage in a well-known Chinese electronics manufacturing facility in Suzhou Industrial Park. Poaching highlights strategic challenges multinational enterprises face in Asia-Pacific economies as more advanced subsidiaries outgrow their earlier low-cost, low-skill vocations. Results revealed that localized skill

shortages within the company relate to the adoption of intra-firm constructive responses. Sheldon and Li (2013) stated employers responded to poaching based on their skill set from inter-firm and intra-firm levels, resulting in retaliatory, defensive and constructive responses. Inter-firm retaliatory responses are through lawsuits, blacklisting, and product market boycotting and even employer blacklisting. The defensive response is not as aggressive; it acts by increasing cost for the poacher and the poached in an attempt to decrease opportunities for opportunistic behavior, and to raise transaction costs for the poachers and poached. The constructive response to poaching would entail forming business alliances to involve the public sector and education providers. Establishing a pay structure focused on skills and promotions (Sheldon & Li, 2013).

The relationship between technology and employment or labor skills, whether positive or negative from an economic and human capital perspective, found that the most developed countries experienced degradation in employment, mostly in the unskilled segment (Pavlidou, Tsaliki & Vardalachakis 2011). The competitive forces surrounding business continued to drive the skill needs within manufacturing industries. Baumann et al. (2014) posited that technology allows the United States to compete with emerging players, such as China and India, in a global market where technology integration is a critical driver to worker skill requirements. The linkage between individual skills, technology, and competencies to competitiveness was clear (Borrás & Edquist, 2014).

In 2013, Nordin, Nasir, Noordin, and Buntat (2013) studied seven elements of skilled workers and employer, needs toward nontechnical skills for electronics sector in

Klang Valley, Malaysia. The skills were: (a) communication, (b) information management, (c) creative thinking and problem-solving, (d) teamwork, (e) organizational and leadership, (f) work attitudes, and (g) personal traits and self-management (Nordin et al., 2013). The study compared the expected skills set and the actual skills set of workers and applicants, results from the *t*-test disclosed a significant gap between the nontechnical skills needed by the electronics sector in Klang Valley, Malaysia, and all the actual nontechnical skills proficiency on skilled workers (Nordin et al., 2013). The study's conclusion revealed that the skilled workers did not fulfill the needs of employers regarding nontechnical skills proficiency, suggesting the need to providing training, which focuses on enhancing the nontechnical skills for skilled workers in the industry (Nordin et al., 2013).

Lapiņa and Ščeuļovs (2014) used surveys and data to ascertain core skill requirements from services industries and manufacturing companies, which detailed how jobs are becoming more skills driven in all classifications. The study revealed the need for added skills in the areas of problem-solving, communication and organizational skills. The study identified human competencies as a significant component in a company.

### **Importance of Technological Skills**

Technology replaced manual labor to provide a competitive advantage to the U.S. manufacturing (Mirchandani, 2012). Improvements in technology were not the only drivers for changing worker skill needs. The adoption of business process reengineering (BPR) to improve costs and competitiveness necessitated work restructuring, driving job skill redesign (Mirchandani). Organizational improvement strategies, such as lean

manufacturing, increased cross-functional knowledge and integrated skills, improving performance within a manufacturing environment (Longoni & Cagliano, 2013). Lean or mass manufacture required definite and different balances in synthetic and analytical knowledge base (Cullinane, Bosak, Flood, & Demerouti, 2012). Lean manufacturing concepts required job redesign, broadening job characteristics for tasks, skills, and knowledge along with social aspects such as teaming (Cullinane et al., 2012). Wyton and Payne (2014) claimed that manufacturers implemented lean practices without considering the effect on core competencies, regarding core skills and customer value within the aerospace industry. Methods such as managing projects and engineering change processes found favor in aerospace and automotive industries abroad and have influenced the skill sets needed for global competition (Parnaby & Towill, 2012).

Technology advancements in manufactured goods, production processes, and equipment contributed to the changes in skill requirements. Prince, Burns, Lu, and Winsor (2015) quantified the skill discrepancy as caused by globalization, technology, demographics, and global competition to supply and demand to match skill sets across different markets and industries. Social capital theorists established decades ago that better-connected people do better in life (Benson, Morgan, & Filippaios, 2014). The emergence of common channels of technology, such as online social networking sites, has given a new incentive to building and exploiting connections for career management (Benson et al., 2014).

In the field of manufacturing, many companies have increasingly required technical skills, especially with the use of computer-driven machines; increased the skills

requirements in manufacturing-related jobs (Cappelli, 2012). Workers and applicants are required to have IT skills over previously hands-on machine jobs in manufacturing companies. This technology changed the dynamics of floor line workers. As technology requirements become more complicated the need to have workers who can operate and maintain technology service lines has increased, however, leaders of manufacturing companies failed to address the required proper training of workers; resulting in the existing of the skill gap (Cappelli, 2012).

Although professionals acknowledge that social networking is essential for business and development, recent graduates coming into the corporate world were not equipped with the skill set related to such technology (Benson, Morgan, & Filippaios, 2014). Benson et al. (2014) concluded from their study of U.K. business graduates and their use of social networking by investigating the employability skill set for contemporary business professional and appeals for higher education to address the skill gap.

The education level of the available workforce contributed to the lack of skilled workers. Turbin, Fuller, and Wintrup (2014) determined that if 15% of the U.S. workforce had the least amount of training, with 35% attaining some vocational education and OJT as opposed to the need for higher skilled workers with a minimum of 2-year associates or technical degrees. Corak (2013) found that high school graduates in 1995 were more likely to invest in higher education than those graduating in 1980; however, the cost of tuition as well as the uncertainty of future salary constituted a



deterrent. Holzer (2012) identified a relationship between investment in human capital in the form of education and training to employment and higher paying jobs.

Borbely (2011) found that displaced workers with a high school diploma or fewer found reemployment at 43% or less while those with higher education reentered the workforce at 55% in a survey of displaced workers between 2007 and 2009. Holzer (2012) cited a lack of emphasis on education and a lack of integration between vocational education and industry as contributing to the gap in skilled workers needed for the higher wage technical jobs. Mrabet and Lanouar (2013) studied the influence of wage elasticity regarding skill bias technical change and foreign sourcing; the findings concluded that an increase existed in the elasticity of wages for U.S. manufacturing based on skill bias more than sourcing. Training and education emerged as a solution to the skilled worker shortage. The higher skills needed for aerospace and advanced manufacturing would require a pool of qualified candidates from which to draw (Mrabet & Lanouar, 2013).

Technology and sourcing strategies driven by open trade policies caused lower skilled jobs to decrease while assisting in the increase of higher-skilled jobs (Polgár & Wörz, 2010). The growing emphasis on skilled workers capable of operating advanced technology, and more traditional manufacturing skills, increased requirements for education and training programs. Deloitte and the Manufacturing Institute (2011) task force determined that to remain competitive the aerospace industry must address the skill gaps. Causes of the skill gaps include insufficient math, technology, and analytical skills complicated by an aging workforce and shifting skills set. Moen, Kojola, and Schaefer (2016) credited aging workers as contributing to a shortage of skilled workers; Moen et

al. (2016) also cited the lack of communication and analytical skills among individual between the ages of 25 to 35-year-old individuals as a contributing factor to the skill gap. Additional factors included a general disillusionment of existing workers cascading into the next generation. Roh, Hong, and Min (2014) related the shift from supplier to risk sharing partner along with failing to invest in research and development as factors in the decline of manufacturing jobs. A general unwillingness of new workers to enter the field further exacerbated the decline (Roh et al., 2014).

De Bruecker, Van den Bergh, Beliën, and Demeulemeester (2015) studied the link between skilled workers and efficiency, quality, and cost, the study results revealed a direct correlation of skills to outcomes. Brondo and Baba (2010) provided insight into some of the employment challenges within the automotive industry caused by changes in requirements, in human capabilities, and expectations driven by restructuring and lean manufacturing in their 3-year case study within General Motors. The workers in both aerospace and automotive industries voiced dissatisfied at the lack of control in the work environment, and they cited work degradation caused by task enlargement as the main reasons for the recruiting and retention problems facing these industries (Stewart, Danford, Richardson, & Pulignano, 2010). A lack of confidence in the ability to execute tasks properly influenced performance and participation. Stewart et al. (2012) provided more insight into the effects of the skills gap regarding performance where workers believed the lean methods did not drive required training and that technology increased tasks along with skills. The introduction of technology and lean methods alone did not

lead to skills gaps but started the shifts to the skill requirements and the architecture of the jobs, which contributed to the skills gap.

The employment outlook for manufacturing workers, including assemblers and technicians, which were projected to increase over the next ten years, with emphasis on team and technical skills (Lockard & Wolf, 2012). Pritchard (2014) confirmed the emphasis a 20-year longitudinal study of 308 companies on the effects of enhanced training, empowerment, and teaming on performance, finding a direct, positive correlation. The labor surplus transformed to a labor shortage because of restructuring and technology driving higher skill sets along with an aging workforce.

In a study conducted in the U.K. automotive manufacturing industry, Begley, Collins, and Donnelly (2015) explored the skills shortage, in 2011 and 2012 employer's skills survey, 39% of employer's reported difficulties in recruitment, of this 17% expressed workers' skills gaps, 9% reported recruits with a gap in technical skills, 7% described positions as hard to fill, and 6% reported retention issues. Begley et al. (2015) discussed the dynamics of the skills needs of the automotive industry, the shift from mechanical instruments to advancement in technology consisting of sciences, aerodynamics, computers hardware, and infotainment as a reason for the shortage. Begley et al. noted this gap as the inability of employers to recruit a workforce with the skills to match industry demands. These skills shortages could hurt production and investments with the automotive manufacturing industry. Exacerbating this shortage is the impending retirement of nearly 40% of the workforce (Begley et al., 2015).

The workplace has experienced rapid and dramatic changes driven by advancement in technology and globalization, information and communication (Asonitou, 2015). Skills set requirements have also changed, including employability skills at all levels (Griffin & Annulis, 2013). Employability skills consist of the knowledge skills, and the ability of an individual to gain and retain a position. Abas-Mastura, Imam, and Osman (2013) cited employability skills as important to employers. However, a gap has been prominent among the demands and expectations of employers and the workforce preparedness of the graduates; as a result, the competitive advantages of most companies were jeopardized (Griffin & Annulis, 2013). Wilson (2013) discussed the changes in supply (skills) and demand (skills needed) and the role of education and training in workforce preparation, increased opportunities, and skills. Technology includes innovation and relevancy; globalization is an outcome of technology, consisting of virtual communication and work. Demographics encompasses the impact of an aging workforce and is considered the most significant change for employees.

Rasul, Rauf, Mansor, Yasin, and Mahamod (2013) noted the relationship between human capital theory and employability skills, identifying employability as the ability to do the job. DeGuzman and Choi (2013) linked employability to career adaptability and success of individuals in an effort to decrease the existing skills gap. DeGuzman and Choi (2013) discussed a study using the Career Adapt-Abilities Scale (CAAS) in the context of Papua New Guinea, to investigate the relationship between employability skills and career adaptability. The results of the study found that the use of the CAAS

method was a useful measurement tool for assessing career adaptableness for recent graduates in Papua New Guinea (DeGuzman & Choi, 2013).

CAAS revealed that a significant relationship existed between career adaptability and employability skills. Using this information, addressing employability skills will address the skills requirement for a specific job; improving the performance of the workers and the company. Notably, the four sub-scales of career adaptability and teamwork skills share a significant relationship (DeGuzman & Choi, 2013). This study serves as a tool for educators and policy makers in Papua New Guinea by providing a richer view of the career adaptability and employability skills as well.

Employability skills are an important skill that employees should have to minimize the skills gap between expected and actual skill requirements (Griffin & Annulis; 2013; Unni, 2013). Employability refers to the essential competencies that a worker should possess to achieve worker success (Griffin & Annulis, 2013). Among the employability skills are (a) communication, (b) teamwork, (c) problem solving, and (d) work ethic. The most common contributor that defined the gap is the lack of soft skills such as communication, critical thinking, and collaboration or teamwork, as part of the employability skills (Kaine & Kent, 2013).

However, higher education does not adequately address the gap in employability skills prior to graduates leaving school (Griffin & Annulis, 2013). Acquiring experience on these employability skills improves the skills set of employees, and decrease the gap in employability skills. Asonitou (2015) identified a procedure to encourages non-graduate and diploma/certificate holders to join the lower graduate intensity occupations

program to address the gap in employability skills. Several perceived definitions for the skills gap, from lack of computer based technology skills, lack of leadership skills, and lack of technical skills. The absence of soft skills, such as communication, critical thinking, and creativity resonates at 44% (Hendarman & Tjakraatmadja, 2012).

Apart from the technical and technological skills, graduates must be equipped, with soft skills (Hogan, Chamorro-Premuzic, & Kaiser, 2013; Islam, Hamid, Shukri, & Abd Manaf, 2013). In a study on Malaysian graduates' employability skills, the results of the gap analysis showed that employers perceive graduates' employability skills performance as lower than the importance assigned to those skills (Islam et al., 2013). The communication skills gap was most prevalent within the areas of the English language use and the employees. Employers can implement improvement efforts and corrective actions for employee satisfaction. Reasons for unemployment related to economically related factors; however, psychological factors associated with employability also contribute to the skills gap (Hogan et al., 2013). Consequently, the case of industrial-organizational psychologists should be uniquely suited to contribute to policy solutions for enhancing employability. Hogan et al. focused on psychologists and their cognitive abilities, personality, and educational achievement, concluding that understanding the psychosomatic factors that make up employability as a means of expediting disconnect of skills possessed and those in demand.

### **Retiring Baby Boomers and the Skills Gap**

Baby boomers are individuals that were born between 1946 and 1964 make 44% of the U.S. working population and, they are critical to workforce production and growth.

However, prediction shows 77 million baby boomers retiring taking years of skills and knowledge with them, prompting concerns of a widening skills gap (Hotchkiss & Rios-Avila, 2013; Cummings-White & Diala, 2013). The actual estimation of the workforce skills gaps and its impact on the manufacturing industry varies greatly (Kochan, Finegold, & Osterman, 2012). The gap in experience and industry skills may escalate with the unambiguous problem of retiring baby boomers. Various private and public industry have experienced recruitment challenges as a result of the skills shortage among potential applicants, particularly in the aerospace industry where a growing number of employees are predicted to retirement by 2020 (Kochan et al., 2012). Further exacerbating the gap is the early retirement of many baby boomers (Noone, O'Loughlin, and Kendig, 2013), worsening the task of recruiting skills workers to replace retiring baby boomers (Cummings-White & Diala, 2013).

Aging workers are a global phenomenon further suggesting a succession plan to retain the knowledge that older workers possess, in an attempt to bridge the gap in the lack of skills among younger workers (Majeed, Forder, Miahe, Kendig, & Byles, 2014). Organizations view the knowledge of older workers as an intangible asset that is difficult to transfer (Borders, Polander, Klein, & Wright, 2015). The exodus of baby boomers that possess both tacit and explicit knowledge is an increasing challenge to the workforce, recruiting individuals with the talent and skills to replace this population will become increasingly difficult (Borders et al., 2015). Čiūtienė and Railatienė (2015) discussed the development of human capital in the wake of an aging population, and the importance of investing in human capital to replace these skills.

## **Efforts to Close the Skills Gap**

The future of the U.S. manufacturing depends on educating new generations to develop competency for skills-intensive manufacturing jobs (Chryssolouris, Mavrikios, & Mourtzis, 2013). From a workforce perspective, the educational and other causes for the development of the skill gap are explored. Together with two educational innovations, chosen for their potential to facilitate U.S. manufacturing's growth, and with it the U.S. economy: (a) MOOC and (b) Stackable Credentials/Credits (Spak, 2013).

MOOC consist of aggregate classes from multiple organizations offered on a single computer platform. Because of the massive enrollees, MOOCs usually have two approaches for feedback design (a) peer-review, group collaborations using crowdsourcing, and (b) online automatic feedback and self-assessments (Admiraal, Huisman, & Van de Ven, 2014). Stackable credentials make US manufacturing sectors look for individuals with specific higher-level certifiable skills versus high school diploma or college degree holders (Spak, 2013). Separately and together, each could hold a fundamental role to lifelong employability at acceptable wage levels for professionals who fill the manufacturing workforce gap, revealing the gap to be one in education, and the innovations discussed here could help alleviate (Spak, 2013).

The government should have a significant role in addressing the issue of the skills gap specifically, regarding the inability to find qualified workers that match the skills requirements of companies (Fenzi, 2013). Fenzi identified four major ways by which the government could address the skills gap. These are through (a) reforming immigration



policy, (b) increasing education spending, (c) retraining programs for unemployed, and (d) providing tax incentives for educating workers among others.

Reforming immigration policies to favor more local Americans is a contributor to closing the skills gap because investing in American workers, even when those workers need skill improvements, is preferable to bringing in outside talent in most cases (Fenzi, 2013). This reform makes companies focus on the local pool of applicants, noting that with proper training, the necessary skills for specific jobs are developed, thus filling vacant positions. Increasing education spending to improving the curriculum to match the skills requirements of on-demand jobs will eventually lead to acquiring skilled graduates to fill in vacant job positions (Fenzi, 2013). Retraining programs for the unemployed and providing tax incentives for educating workers will encourage workers or applicants to gain the proper training and right skills to fill the requirements of vacant jobs.

The manufacturing industry faces a challenge of finding workers with the skills to fill open positions; due to the lack of trained workers in the job market, and there is evidence that the gap is widening due to the lack of potential skilled workers entering the training pipeline (Sears, 2013). Sears proposed other means of closing the skills gap based on attempts to identify the factors that hinder existing vocational training programs alignment with workforce demands in the manufacturing industry. Sears concluded that there is a need to change the public perception of manufacturing industry to overcome the skills gap; postsecondary education programs opinion of industry drives curriculum. The real-world application can assist vocational education programs students in transiting into

the workforce, and programs that implement new marketing techniques are important to improving the status of manufacturing in the U.S. (Sears, 2013).

Some companies have adopted a new means of facilitating their recruitment processes where selected groups of applicants were graduates of an apprenticeship program, in which the focus was on developing skills relevant to the assigned position (Kochan, Finegold, & Osterman, 2012). The old recruitment process started with a large pool of applicants and ended up with a low percent of skill matching based on the skill requirements of a company. The new method begins with fewer applicants who were all graduates of the company's focused apprenticeship program (Kochan et al., 2012). Even when the new method starts with fewer applicants, it still has the potential of ending up with more skilled recruits or hires because they focused on instilling the right skills in the applicants who most likely have or developed the skill set that the company requires (Kochan et al., 2012).

The training by National Dual Training System (NDTS) are a means of enhancing the Non-Technical Skills of the workers. The NDTS training systems through designed can enhance the technical and non-technical of workers. Through this system, workers can improve their skills without affecting their work productivity (Nordin, Nasir, Noordin, & Buntat, 2013)

On-the-job training has also been said to assist in closing the skills gap in the manufacturing industries (Cappelli, 2012; Kobes, 2013). Kobes (2013) noted the rapid change in technology had created a skills gap in the U.S. manufacturing industry, which increased by the projected numbers of retirements from an aging of the workforce. The

U.S. manufacturing industry, especially small manufacturers, struggled with limited resources and tight production schedules, creating challenges to recruiting and training new workers. Researchers suggest that investment in industry-driven on-the-job training can be an effective workforce development strategy in this economy (Cappelli, 2012; Kobes, 2013). The benefits of an on-the-job training program include financial incentives and accurate skills development when companies bring workers in to teach trainees the skills they need to succeed in specific positions at the firms (Cappelli, 2012; Kobes, 2013). On-the-job training can provide companies with the opportunity to develop the correct and required skill into trainees to address the skills gap between the expected and actual skills set of workers or applicants. Many recruits enter into the training program with the expectation of becoming permanent employees after the completion of the training (Kobes, 2013).

### **Transition**

In section 1, I introduced the general business problem, the lack of skilled productions workers within the manufacturing industry. Section 1 also included the purpose, background, and significance, the nature of the study, the research question, and the interview questions. I continued with a discussion on the limitations, assumptions, and delimitations of the study. The review of literature supported the conceptual framework of the human capital theory, which contributes to increased productivity, profitability, and a competitive advantage. The purpose of the study was to explore strategies for hiring managers to recruit skilled workers.

In section 2, I present a discussion of the role of the researcher, selecting research participants, a description of the study population, the research design, data collection, evidence analysis techniques, and a review of validity and reliability in qualitative research. Section 3 includes the presentation of findings and the significance of the study relating to a business and concludes with implications for social change, further recommendations, reflections of my experience and the conclusion.

## Section 2: The Project

The manufacturing industry has transitioned from offshoring to reshoring, moving from a labor-intensive mechanical process to an information-intensive process; many managers expressed their concerns about the supply of skill available in the workforce and those required by the manufacturing industry (Autor, 2015). The changes in the manufacturing industry validated the importance of researching the strategies of hiring managers to recruit a skilled workforce. Section 2 provides a restatement of the purpose statement, the role of the researcher, the participants, population and sampling, ethical research practices, and research method and design. I describe the data collection process including the instrument, collection techniques, data organization process, and reliability and validity of the research.

### **Purpose Statement**

The purpose of this qualitative single case study was to explore the strategies that hiring managers used to recruit skilled production workers. The population for this study included hiring managers from a manufacturing company in Southeastern South Carolina who have developed strategies to overcome recruitment challenges. The findings of this study may contribute to potential improvements in business strategies that could assist in the recruitment of skilled workers, leading to increased productivity within the manufacturing industry. The implications for positive social change included the opportunity for personal growth and development for the population recruited for positions and economic growth within the community.

### **Role of the Researcher**

Unlike quantitative studies in which the researcher and the instrument are separate entities, in qualitative studies, the researcher becomes the instrument, which the data flows through (Tracy, 2013). I served as the primary instrument for data collection. My role was to ensure participants understood the purpose of the study, the interview questions, data collection through face-to-face interviews, and the data analysis process. I was employed in the manufacturing industry over 30 years ago; however, I have no direct relationship with the industry or the study participants. My previous experience is what interested me in the industry changes and challenges with the skills shortage and recruitment strategies to meet the industry needs.

The Belmont Report provided the ethical foundation for human research. The guidelines include (a) respect for person, (b) ensuring participants are aware of the right to withdraw from the study at any time, (c) beneficence, (d) protecting participants from harm and injustice, and (e) the unbiased selection of participants (Cascella & Aliotta, 2014). In this study, I followed the protocols outlined in the Belmont Report by purposefully selecting participants to eliminate vulnerable persons and preserve ethical standards.

Bias is a threat to the validity and reliability of a study and can arise from the influence of individual ideas and personal beliefs regarding the phenomenon of interest (Roulston & Shelton, 2015). Researcher bias can occur through personal judgment influencing data collection or the presentation of findings. My lack of a direct relationship to the topic and the participants was beneficial to reduce the potential for

personal bias and ethical issues. The interview protocol is a procedural model designed to answer the research questions (Jacob & Furgerson, 2012). The interview protocol included an outline for conducting the interviews and provided me the opportunity to gather information about a phenomenon by asking questions and observing behaviors within the participant's environment. The interview protocol prompted me to ask additional questions for further clarification and to perform member checking to validate the interview responses.

### **Participants**

The participants for the study were three manufacturing hiring managers. Yin (2014) identified three participants as a number sufficient for a case study. The three participants offered a wealth of experience related to the research topic. Newington and Metcalfe (2014) stated that in qualitative research, the researcher attempts to recruit participants whose perceptions align with the research question so they are a source of information pertinent to the phenomenon under exploration. Sargeant (2012) discussed the significance of recruiting participants who can provide valuable aspects and viewpoints related to the topic under study. The criteria for the study participants were: (a) employed as a hiring manager in a manufacturing industry and (b) used strategies to recruit skilled production workers. Because of their industry recruitment expertise, the participants were qualified to describe strategies hiring managers use to recruit skilled production workers.

I gained access to participants by using the South Carolina Chamber of Commerce members directory to identify manufacturing companies. I emailed several

business leaders in medium-size manufacturing companies an invitation (Appendix A) to participate in my study until one leader accepted my invitation. After the business leader agreed to participate in my study, I worked with the business leader to build a relationship to gain access to participants. Once a relationship was established, I emailed a letter of cooperation to the business leader to be signed and returned to me with a list of three participants and contact information.

Creating a working relationship with participants is important to the success of qualitative research (Swauger, 2011). Rubin and Rubin (2012) mentioned the importance of establishing an environment of trust. I built a working relationship with participants by creating an environment of transparency and trust by fully debriefing the participants on the purpose and procedure of the study.

### **Research Method and Design**

When conducting a research study, selecting the appropriate research method and design differs according to the framework and the research questions (Ham-Baloyi & Jordan, 2016). Research methods and designs address the how and why of data collection and analysis for qualitative and quantitative approaches (Yin, 2013). Merriam (2014) stated that qualitative research addresses how participants interpret experiences, how individuals create their world views, and the meaning participants ascribe to experiences. I considered three research methods for my study: qualitative, quantitative, and mixed methods. The three research designs considered were a case study, ethnography, and phenomenological. The research method selected for this study was qualitative, and the research design was a case study.



## **Research Method**

Qualitative research provides an information-rich, detailed, holistic approach in which an experience is considered in its perceived entirety and lived experiences are the unit of measure (Tracy, 2013). The qualitative method may be necessary to study a phenomenon with limited existing information, unknown variables, and a supportive theory lacking detail (Yin, 2013). Kaczynski, Salmona, and Smith (2014) described qualitative research as fluid, flexible, and nonlinear, allowing the researcher to explore a deeper understanding of a phenomenon. The qualitative method was well suited for this study because it allowed the participants to share their experience with recruiting skilled production workers in their words.

The quantitative method was not appropriate for this because it involves measurements and analysis of causal relationships between variables, relying on mathematical models and statistical data. The quantitative method focuses on deductive objectivity in which the researcher is distance and detached, and in which the researcher rejects or accepts the null hypothesis (Kaczynski et al., 2014). The objective of the study was to explore the recruitment experiences of hiring managers by collecting data through interviews; this process did not involve statistical analysis. The mixed-methods approach combines qualitative and quantitative methodologies and is useful when a researcher has an expressed need to explain how the two methodologies relate to each other's (Huan-Niemi, Rikkonen, Niemi, Wuori, & Niemi, 2016). Comparing qualitative and quantitative data was not the intent of this study. Given the purpose of the study to explore

recruitment strategies of manufacturing hiring managers, the qualitative method was the appropriate choice.

### **Research Design**

Qualitative designs consist of various options that include case study, phenomenology, and ethnography. I selected a case study design because it is a strategy of inquiry that involves an in-depth exploration of an event, program, individual, or situation (Leedy & Ormrod, 2013). Case study research is appropriate for addressing a phenomenon related to business organizational studies, allowing an in-depth investigation (De Massis & Kotlar, 2014). Case studies are appropriate when the goal of the research is to explain the how or why of a current circumstance or distinct situation (Yin, 2013). De Massis and Kotlar (2014) remarked how the case study uses various sources of data collection including interviews, direct observations of participants, and document review. The purpose of this study was to explore strategies hiring managers within a manufacturing company use to recruit skilled production workers in the context of a demonstrated skills gap.

Other research designs considered but not selected research study were ethnography and phenomenology. Ethnography is used to explore the cultural concepts of a phenomenon (Pratt, 2015). My study was not culturally rooted, which made the ethnographic design unsuitable. Hyett et al. (2014) described the phenomenological method as lacking the flexibility seen in case studies. Mayoh and Onwuegbuzie (2015) stated phenomenological design has a philosophical focus on the social perspective of an individual's experience. The phenomenological design was not appropriate to explore the

strategies of hiring managers to recruit skilled production workers, which was the intent of this study.

Data saturation is not necessarily about numbers but is found in the depth of the data collected (Burmeister & Aitken, 2012). O'Reilly and Parker (2012) suggested that data saturation occurs when sufficient information is collected to replicate the study, and when participants offer no new information during the interview process. Presseau, Boyd, Francis, and Sniehotta (2015) stated data saturation is achieved when no new information emerges, and there are no identifiable conflicts of themes. To ensure data saturation, I reviewed company documents that were relevant to the research question and conducted individual interviews asking each participant the same interview questions until no new information emerged.

### **Population and Sampling**

The population for this study included three manufacturing hiring managers of a company within Southeastern South Carolina, who had implemented successful strategies to recruit skilled production workers. Purposeful sampling was the method used to select a sample of participants. Purposeful sampling is used to identify participants with experience related to the phenomenon (Ritchie, Lewis, Nicholls, & Ormiston, 2013). Patton (2015) noted the use of purposeful sampling originating from the need to access information-rich cases to gain an in-depth understanding of the research topic. Purposeful sampling is nonrandom, allowing the researcher to intentionally select individuals who are knowledgeable and suited to address the case of interest (Etikan, Musa, & Alkassim, 2016). I used purposive sampling to select hiring managers of a mid-size manufacturing

company with the expertise to contribute their knowledge and recruiting skills to this study.

Sample size in qualitative interviews is seldom justified beyond data saturation as the guiding principal (Marshall, Cardon, Poddar, & Fontenot, 2013). The selected sample of participants should reflect the knowledge and experience related to the research question. Bouges (2013) conducted a case study and reached data saturation interviewing three participants. Yin (2014) suggested a sample size of three as sufficient for a case study. In qualitative studies, samples sizes should be sufficient to achieve saturation; three manufacturing hiring managers' were participants for this study, based on their experience in recruiting skilled production workers. Saturation is present once participants no longer add any additional novel or substantive information to the data (Dworkin, 2012). Data saturation refers to both information that points to novel themes, as well as information that illuminates relationships that exist between identified themes. I used interviews and company document review to explore successful recruitment strategies until no new information emerged. The eligibility criteria for participants were that they were manufacturing hiring managers who were successful in recruiting skilled production workers to meet industry demand. Bolderston (2012) noted how qualitative research includes participants for their insight and knowledge of the phenomenon under study.

I conducted the interviews in a setting in which the participants felt comfortable (their work environment); this setting allowed the participants to feel relaxed to answer the questions. Javalgi, Granot, and Alejandro (2011) suggested holding interviews in a

setting that provides comfort to participants. Jacob and Furgerson (2012) recommended using a setting that offers the participants the most comfort and that limits distractions and noise to facilitate better data recording.

### **Ethical Research**

The informed consent document is an important element of ethical and legal federal regulatory requirements to protect individuals participating in a research study. The informed consent document provides participants with a written description of the components of the study (Lentz, Kennett, Perlmutter, & Forrest, 2016). The consent document includes the purpose of the study, the data collection procedures, the expected risks, and the benefits of participation. The informed consent offers full disclosure of the intent of the study, reduces the risk of deceptions, and protects the privacy of the participants (Yin, 2014); the consent document also provides the researcher's contact information for transparency. Before starting the interview process, I reviewed the consent form with participants. I asked participants to sign the consent form indicating their approval to participate in the study. Rowley (2012) specified the need for participants to sign the consent form. To adhere to ethical guidelines, I informed the participants of their right to withdraw from the study at any time with no fear of repercussions or retaliation.

If a participant wishes to withdraw from the study, they may contact me via email or by telephone with their request. Upon their withdrawal, I will remove their information from the dataset and destroy. Wertheimer (2012) proposed that compensation might be coercive depending upon the level of compensation and the participants. There were no

financial or any other types of incentive(s) offered to the participant, removing incentives from any ethical consideration. Upon completion of my research study, I will provide a 1-2 page summary of the findings and results of my research study to stakeholders.

Research studies must include the fundamental foundation, which guides the ethical considerations to protect the research participants. This study complied with the ethical standards of Walden University and the principles of the Belmont Report, autonomy, beneficence and justice (Owonikoko, 2013). I received approval from the Walden University IRB prior to the start of the participant's involvement in the study, this ensured adherence to the guidelines, procedures, and protection of the participants of the study (IRB Approval Number: 05-31-16-0227690).

Protecting the identity of participants through de-identification is imperative to ensure confidentiality (Stubbs & Uzuner, 2015). I used a combination of letters and numbers, such P1, P2, and P3 to safeguard the identity and confidentiality of the participants and conceal the name through a labeling method, using letters XYZ. All data including participant information and a listing of pseudonyms linked to identities will be kept in a locked file cabinet. I will have sole access to this information and will maintain data for a minimum of 5 years after this time I will destroy the data.

### **Data Collection Instruments**

In a qualitative study, the researcher is the primary data collection instrument (Anderson & Holloway-Libell, 2014). As the primary data collection instrument, I conducted semistructured interviews to explore strategies to recruit skilled workers. Interviewing is a qualitative data collection strategy where participants are asked a series

of predetermined but open-ended questions (Shi, 2014). Using open-ended interview questions helped to ensure credibility, facilitate data analysis and reduce researcher bias (Patton, 2014). Open-ended questions provide the ability to probe for additional input by allowing the interviewee to add depth and merit to the answers (Jacob & Ferguson, 2012).

The interview protocol (see Appendix A) detailed the script for data collection and the questions used to probe participants. The interview protocol is a valuable tool; it can enrich the trustworthiness of qualitative research that involves interviews. Interview protocols include brief details of the case study, the data collection routine and the list of interview questions (Yin, 2014). I utilized a digital voice recorder to record individual interviews of each participant to help identify major themes. Participants provided their permission to record the interviews during the consent process. Reimer and McLean (2015) defined note taking as paying close attention to the research environment and entails, documenting words and quotations, or other information deemed significant to the research. As a part of the data collection instrument, supplementary tools such as a notepad to strategically select information that could be used to remember scenarios that prompted follow questions. I reviewed company documents to analyze strategies to assess the transformative influence on recruiting skilled workers. Researchers use member checking to enhance the validity and reliability within the design of the study (Koelsch, 2013). I used member checking to ensure the validity and reliability of the study; member checking also gave the participants an opportunity to analyze and validate their responses.

### **Data Collection Techniques**

The data collection in this research study involved semistructured interviews as the primary data collection technique and company document reviews as the second data collection technique. Semistructured interviews start with pre-defined questions; however, the research can introduce follow-up questions to reflect the direction of the participant responses to provide more of a spontaneous conversation between the researcher and the participants (Austin & Sutton, 2014). In this study, I conducted semistructured interviews following the interview protocol detailed in Appendix A. Bekhet and Zauszniewski (2012) described the data collection techniques as methodological triangulation to increase validity. The use of open-ended interview questions guided the process giving the participants the opportunity to expound on the topic of recruiting qualified workers (Holmes, 2014). After receiving permission from the company human resource manager, I contacted the participants to schedule the interview. The interviews were conducted in a conference room within the manufacturing company. After reviewing the informed consent and obtaining the participants, I begin the interview process. I utilized a digital voice recorder to record the participant's responses; this was supplement by hand written notes in a reflective journal. The interviews lasted no more than 45-60 minutes and terminated when the participants conveyed that he or she had no more information on the topic. An advantage of conducting interviews is that it captures verbal and non-verbal cues, which can indicate any level of discomfort for the participant, signaling the researcher to re-access the question (Irvine, Drew, & Sainsbury,



2013). During each interview I observed facial expressions, gestures and other non-verbal communication enhanced the data collection.

Researchers use document analysis for as a means of reviewing or evaluating material related to the topic of interest (Brookes & Normore, 2015). In this study, I used company documents as an additional data collection technique. Document analysis involves reviewing policies and procedures, reports or additional administrative documents to gather information about how the business addressed the proposed business problem (Gultekin, Anumba, & Leicht, 2014). I solicited company documents related to recruitment strategies during the initial interview. The documents included methods of recruitment, the outlets used to connect with potential employees, the language used in recruitment communications, and posting, applications, interview scripts, and company website. I reviewed and analyzed the documents after the initial interview. An advantage of document review is that it removes the potential for the researcher to influence the effect they have on a person when they conduct the research (Gultekin et al., 2014). A disadvantage occurs when documents are retained selectively, leading to bias views of the documents (Gultekin et al., 2014).

Researchers can create reliability through member checking, which is essential to validating the credibility of the data collected and emerging theme from the participant's interviews and content analysis (Koelsch, 2013). Forber-Pratt (2015) mentioned member checking as a means of improving credibility and validity in qualitative findings. I employed member checking by conducting follow-up interviews to share the finding from the initial interview session. Individual follow-up interviews allowed the participant

to review a summary of the interview notes that included a brief interpretation of the findings from their interview. Allowing participants, the opportunity to confirm my interpretation, and ensure the essence of the thoughts they intended to convey, member checking also provided the opportunity to ask additional question of participants. Member checking lasted 15-30 minutes per participant.

The use of company records, interviews, participant observations, direct observations, and artifacts are sources used for case study evidence (Yin, 2014). Triangulation is present when a researcher evaluates multiple data sources. The use of methodological triangulation can lead to increased validity (Baškarada, 2014); therefore, I used methodological triangulation to valid my data, which were collected through two data collection techniques, interviews, and company document review.

### **Data Organization Technique**

I used a coding process to organize the data retrieved from the participant interviews and company recruitment document reviews. Gross, Blue-Banning, Rutherford-Turnbull, and Francis (2015) identified coding as a means of comparing data. For this study, I assigned each participant an electronic folder for storing data generated during the interview process, and after the follow-up interviews to maintain confidentiality. I labeled each folder using a distinctive identifier assigned to each participant P1, P2, and P3. I used the folders to organize raw data; I did not share this information with the participants. The coding process is beneficial because the researcher can identify each theme as described by the participant (Da Mota Pedrosa, Näslund, & Jasmand, 2012). I used the same labeling convention to organize company documents

information. Zamawe (2015) used NVivo 9 to sort data into concepts and to facilitate an accurate, transparent data analysis process. I used Nvivo 11 software to assist with coding and organizing transcribed data into themes. I converted all raw data into an electronic file, then stored on an external hard drive.

### **Data Analysis**

Triangulation consists of using multiple methods for gathering data that may yield different results. These data are sensitive to different real world nuances, not necessarily to show the same result from different approaches (Carter, Bryant-Lukosius, DiCenso, Bylthe, & Neville, 2014). Polit and Beck (2012) identified four types of triangulation (a) data triangulation (b) methodological triangulation (c) investigator triangulation and (d) theory triangulation. Yin (2013) noted that choices in the data source might strengthen the validity of a case study. Methodological triangulation is achieved by comparing the conclusions drawn from analysis of multiple data sources (Song, Son, & Oh, 2015). If an agreement is established across the conclusions, validity is established (Peeters, Belyukova, & Martin, 2013). Methodological triangulation requires the researcher to gather data from more than one source to enhance the conformability of the results (Nilsson & Chron er, 2015). For this study, I used methodological triangulation by collecting data through interviews and company document reviews related to successful recruitment strategies.

The data analysis process consisted of coding, reviewing, categorizing, defining, and combining common statements to identify emergent themes and conclusions (Maxwell, 2011). I coded the data using NVivo 11 software. Zamawe (2015) used NVivo

9 to assist in managing and coding of data throughout the analysis process. Bazeley and Jackson (2015) discussed five important areas in which NVivo improved analysis of qualitative data; these are (a) data management, (b) manage ideas, (c) query data, (d) modeling visually, and (e) reporting. Houghton, Casey, Shaw, and Murphy (2013) introduced the concept of conducting a search text query to identify specific words or terms that can assist in labeling the data. I conducted a text search query to categorize responses by each hiring managers to identify themes that stemmed from the strategies used to recruit skilled workers.

I conducted a constant review of literature related to the topic to gain insight and to develop meaningful, evidence-based conclusions related to the skills gap and the human-capital perspective concerned with recruiting qualified employees to enhance productivity. I organized codes that were consistent across interviews to form categories, which develop the emerged themes. Ritchie, Lewis, Nicholls, and Ormston (2013) noted the importance of continuously moving between the emerging themes and the original material derived from the literature. I continued this process to identify connections between the themes and literature. Once the coding process was complete, I reviewed the company documents related to employee recruitment to identify any language or procedures used in the company's effort to recruit skilled workers. Noted were relevant observations regarding recruitment strategies related to word choice and communication style. The data analysis process continued until I was confident of data saturation; this was evident by an inability to uncover new codes, information, or themes. I compared the results of the document reviews to the results of the interview data analysis. I continued

this process to corroborate the findings culled directly from the participants. I noted any contradictory themes in the data analysis and reporting.

### **Reliability and Validity**

Ensuring reliability and validity strategies are important within any study to ensure the results are valid and trustworthy (Wahyuni, 2012). Implementing strategies to address reliability and validity in a study ensures trustworthiness (DePaolo & Wilkinson, 2014). Qualitative reliability is a process researchers use to check for the accuracy of the findings (Schreier, 2012). A researcher must assess the trustworthiness of the information conveyed in their study (Gioia, Corley, & Hamilton, 2013). Qualitative researchers use different criteria to measure the trustworthiness (Leung, 2014). Lincoln and Guba (1985) noted the need for qualitative researchers to reflect the views of the participants, as accurately as possible. To identify quality research, Lincoln and Guba posited qualitative research must be credible, transferable, dependable, and confirmable. Reliability in qualitative research aligns with dependability; credibility, transferability, and confirmability align with validity.

#### **Reliability**

*Dependability* refers to the ability to display how in the same context, using the same methods, and similar participants, another researcher, would generate the same results (Lub, 2015). To ensure dependability, I maintained fidelity to the prescribed procedures detailed in this section. I also create an audit trail that future researchers can use to replicate the study and to increase rigor. Houghton, Casey, and Murphy (2013) discussed the use of an audit trail to increase the rigor of a study. The audit trail is

maintained through extensive notes related to the research data (Houghton et al., 2013). I kept a detailed log and field notes during the study. My notes included specific details and issues with design and implementation, field occurrences, and reflections on the study. To further increase the reliability of this research the study included the use of NVivo 11 software to store and organizes data, including handwritten field notes, maintaining documents for coding of participants, interview transcripts, and document review. Zamawe (2015) discussed the effectiveness of NVivo 11 in the data analysis process, noting the ease and efficiency of coding. I also applied member checking to increase the dependability and credibility of the study. Member checking also enhanced the reliability of the results, by ensuring the conclusions I drew from the data aligned with the participants' intended meanings.

### **Validity**

Triangulation and member checking are two processes used to secure validity in research (Zohrabi, 2013). Yin (2012) identified documentation, interviews, participant observations, direct observations, and artifacts as sources used by researchers for case study evidence. I use methodological data triangulation of different sources to enhance the validity and reliability of the data and the results. Triangulation will facilitate replication of the study (Zohrabi, 2013). Börjesson (2014) described member checking as a way of ensuring validity in qualitative research. I used member checking to give participants the opportunity to confirm and validate the results and interpretations from the interviews. The member checking process supports the plausibility and truthfulness of the information (Zohrabi, 2013).

*Credibility* is achieved when the results of the data analysis reflect the participants experiences conveyed during the interview process (Rapport, Clement, Doel, & Hutchings, 2015). In establishing credibility, the researcher must attend to the threat of their perceived bias presented in the analysis and reporting. Methodological triangulation combines two or more data collection methods to create a more valid and credible view of the data (Bekhet & Zauszniewski, 2012). I used methodological triangulation to increase credibility in my study triangulation was achieved by collecting and analyzing data from interview responses and company documentation.

*Transferability* allows the reader to decide whether similarities are present within the content of the research study (Duggleby & Williams, 2016). Rapport, Clement, Doel, and Hutchings (2015) discussed transferability as to the extent that the results of qualitative research can transfer or generalize to other contexts or circumstances. Although transferability is not a primary goal of case studies, it can be increased using in-depth description and diverse population (Morse, 2015). To address transferability in this study, I recruited participants who met the inclusion criteria of hiring a manager to address the research question. The interview protocol increased clarity during the interview process.

*Confirmability* refers to the intersection among credibility, transferability, and dependability (Moon & Blackman, 2014). In confirmability, the results must reflect the participants' voices and inform all themes generated from the data. To attain this, I set aside any preconceptions or biases and focus on the insight gleaned from the participants. After each interview, I created field notes from each participant's response. These notes

reported my remarks, and observations regarding emotions that participants display, and insights. Li and Zhang (2015) mentioned the usefulness of fields notes in corroborated the data gathered from the analysis of the study. Throughout the data collection process, I checked for data saturation by analyzing and coding participant data. Saturation was evident at the point where no new themes or codes emerge from the participants, as noted by (O'Reilly & Parker, 2012)

### **Transition and Summary**

In Section 2, I have described the purpose of this research study, the role of the researcher, the participants, and population and sampling, as well as the methods and processes, used to collect and analyze data. I also addressed dependability, credibility, transferability, and confirmability. The purpose of this qualitative case study was to explore strategies used by hiring managers to recruit skilled production workers. To explore this phenomenon, I interviewed managers and reviewed company documents related to recruitment strategies. Data collected through interviews and company documents proceeded until I reached data saturation. I analyzed data collected from the interviews and company documents and organized using codes. Methodological triangulation from these two data collection techniques increased the reliability and validity of the study. In Section 3, I present the research findings, application to professional practice, implications for social change, recommendations action, and recommendations for further studies. Section 3 ends with a summary and conclusion.



### Section 3: Application to Professional Practice and Implications for Change

Managers in the manufacturing industry need successful strategies to recruit and hire skilled production workers. Four key themes emerged from the participant responses and document analysis that may improve recruitment practices among manufacturing and other industry managers. In Section 3, I discuss the presentation of findings, applications to professional practice, recommendations for action, recommendations for further research, and implications for social change. This section concludes with my reflections and conclusions derived from the study.

#### **Introduction**

The purpose of this qualitative single case study was to explore strategies used by manufacturing hiring managers to recruit skilled production workers. Data were collected from semistructured interviews and documents from one manufacturing company in Southeastern South Carolina. Purposeful sampling was the method for participant selection. Once the company agreed to participate in the study, I made contact with prospective participants by email to introduce myself, describe the purpose of the study, and present the criteria to participate. I emailed the informed consent forms prior to scheduling the interviews. The signed consent forms were collected on the day of the interviews. I conducted three face-to-face semistructured interviews with several follow-up questions that were generated from each participant's responses to the initial questions. I interviewed three participants and stopped the process because the final participant added no new information. I transcribed the digital audio recordings and combined the interview data, document data, and website data, which provided sufficient

information for data analysis. I conducted data analysis using NVivo 11 to identify codes, keywords, and emerging themes. I applied member checking by asking the participants to examine my presentation and interpretation of the transcribed data to strengthen the credibility of the case study.

I collected and analyzed data to identify themes regarding strategies used by manufacturing hiring managers to recruit skilled production workers. The four themes that emerged were (a) industry and education partnership to enhance recruitment efforts, (b) maximizing external recruitment opportunities, (c) offering more on-the-job training to promote internal employees, and (d) competitive compensation. In the first theme, participants emphasized the value of industry and education partnerships in developing the skills needed to meet industry needs and secure future business opportunities through a competitive advantage that skilled workers bring. In the second theme, participants stressed the importance of utilizing alternative recruitment methods and moving away from the traditional job posting and resume review. In the third theme, participants emphasized the importance of recruiting from within the current cohort of employees, which can ensure the development of skills from inside. The fourth theme expressed the importance of offering competitive compensation to attractive top talent, which leads to increased productivity and profitability.

### **Presentation of the Findings**

The primary research question of this study was the following: What strategies do hiring managers use to recruit skilled production workers? Four themes emerged during the data analysis regarding the strategies used to recruit skilled production workers. The

first theme related to industry and education partnerships to enhance recruitments efforts. The second theme related to maximizing external recruitment opportunities. The third theme related to offering more on-the-job training to promote internal employees. The last theme related to competitive compensation strategies. Participants expressed the importance of recruiting skilled production workers to meet industry needs. Hiring skilled workers begins with adopting new means of facilitating the recruitment processes.

### **Industry and Education Partnerships to Enhance Recruitment Efforts**

An industry and education partnership was the first key theme that emerged from the data analysis. Participant 1 said, “recruitment is a continuous effort, and it is building a pipeline through industry and education partnerships to increase recruitment opportunities.” Participant 2 agreed, stating “we’ve [been] able to recruit folks from the community college 6 week CNC program; however, the skills set is very basic. We require an advanced level of skills because of the complexities of the job, but in the cases where we have hired from the program, we [placed] these folks on the really basic machine and then build their skills from there. Participant 2 also reported, “Now the two-year program that the college offers produces very good folks.” We hired a guy that got his two machine tool degree. He worked out really, really well he got promoted quickly”. Participant 2 stated, “managers started looking at how to address their skills needed 10 years ago and began to focus on building a strong recruitment and training program; this led to partnering with local area high schools and the community college”. Lee, Hope, and Abdulghani (2016) posited that industry and education partnerships could provide relevant work experience to meet industry needs. Flynn, Pillay, and Watters (2016)

emphasized the importance of industry and education partnerships as a means of providing recruitment opportunities for industries. Participants from the current study encouraged efforts such as word of mouth through existing employees and networking with professional organizations. Some partnership activities were: (a) workforce development programs with the local community college, (b) bringing in an apprentice for a trade, and (c) working with local high schools to encourage students to consider manufacturing as a career option.

The state of South Carolina stimulated partnerships between industry and the local community through funding initiatives for business development. The community college as a partner applied these funds to the development of industry-specific training. Participant 1 stated, “our partnership with education has allowed us to recruit basic level one skill workers and even more advanced level 3 workers with the CNC skills we need.” The partnership also provides an evaluation tool for applicants and employees to assess their qualifications. All participants confirmed the importance of collaborating with the local community college, citing industry partnerships as an important strategy for recruiting high-performing candidates. An education and industry partnership can enhance economic prosperity and align skills with industry needs (AbdElall, Krajnik, & Hasan, 2015).

Participants reported that successful occupational programs such as college to career readiness (CCR) at community colleges produce graduates whose skills are in demand by employers, and provide industry-recognized training and credentials. This finding was consistent with Klescheva’s (2014) discussion on the partnership between

employers and education as an arrangement of competitive human capacity formation that facilitates the growth of knowledge to meet the needs of the labor market. Flynn et al. (2016) emphasized the importance of industry and education partnerships as a means of providing recruitment opportunities for industries. Kornfeld and Kara (2015) suggested that the industry and education partnership establishes an innovative approach to manufacturing sustainability. Some companies are facilitating their recruitment processes through an apprenticeship program, where the focus is on developing skills relevant to the assigned position (Kochan et al., 2012). The collaboration with the community college is beneficial to the company's productivity. Building on the human capital theory, which was the conceptual framework of this study, the research finding of the first theme indicated that community partnerships support higher levels of training and education that align skills with an organization's objectives. Table 1 is a summary of the word frequencies related to the first theme that emerged during data analysis.

Table 1

*Industry and Education Partnerships to Enhance Recruitment Efforts*

Theme 1 nodes	Source	Reference
Community college	3	12
Apprenticeship program	3	7
Machine tool degree	3	10
Industry training or credentials	3	8
Partnerships	4	6
Total references Theme 1		47

The industry and education partnership provides an apprenticeship program that offers students with real-life experiences that can translate to college and career-ready

skills. The participants reported that the program could enhance career readiness because the apprenticeship program is a concerted effort between industry and education, and both stakeholders understand how their efforts fit into the overall purpose of the program. Participant 2 shared the company's experience with their first apprentice, stating "we gave him (the apprentice) a neon shirt so that everyone could identify him and look out for him, safety is important. He is really doing a great job. He is going to have a really good career in the manufacturing industry." We plan to expand the program in the coming year."

### **Maximizing community industry specific recruitment**

After interviewing the three participants and reviewing the standards of quality and excellence policy, the theme of maximizing external recruitment opportunities emerged. Each participant stated how meeting the need of production quality was essential to the business. Participants agreed that an effective recruitment practice begins with identifying targets to recruit skilled candidates. Sources include industry-specific recruitment agencies such as direct hire and temp-to-hire agencies that allow the manager to recruit temporary employees, which provides the opportunity to develop the industry human capital. Abdullah, Yok, and Zakaria (2013) discussed the expertise of and strategic alliances with recruitment agencies to ensure access to the best candidates. Russel and Brannan (2016) asserted that effective recruitment agencies possess excellent working knowledge of the local markets and are key players in the industry sector.

Each participant in the current study emphasized that recruitment is a focus for the organization, stating that productivity depends on recruiting skilled workers.

Participant 1 stated “company recruitment strategies include job fairs, new paper ads, and word of mouth; however, we’ve had a good deal of success working with recruitment agencies that focus specifically on the manufacturing industry. This has allowed us to recruit talent from different areas throughout the state.” Participant 2 expressed the importance of collaborating with external recruitment agencies to ensure recruitment strategies achieve the business objectives by targeting specific skill disciplines related to industry needs and goals. Working with recruitment companies that have knowledge of the local market and competition within the industry is vital to recruitment efforts. For example, Participant 2 stated, “the manufacturing market in the area is tight, and as more companies enter the market the competition for skills will increase.” Therefore, utilizing companies with targeted recruitment efforts may promote business success. Recruitment agencies are skilled in recruiting highly competent employees. Recruitment can consist of both internal sources and external sources (Abdullah et al., 2013). Table 2 provides a summary of the word frequencies related to the second theme that emerged during data analysis.

Table 2

*Maximizing community industry specific recruitment*

Theme 2 nodes	Source	Reference
Outside recruitment agencies	4	6
Industry specific agencies	4	10
Direct hire services	4	7
Temp to hire services	4	8
Recruiting from other cities	3	5
Total references Theme 1		36

The significant point from all of the participants was that external recruitment opportunities provide the ability to improve the company's brand name in the community and to increase industry popularity among younger people. Participant 3 remarked, "recruitment and selection of skilled candidates have to be a continuous practice." Shammot (2014) identified this process as a method to enhance how organizations manage their human capital. People (human capital) are fixed capitals within an organization, bringing skills and abilities that yield profits and can increase competitive advantage and achieve the company's strategic goals (Ekwoaba, Ikeije, & Ufoma, 2015).

#### **Offer computer numerical controlled training as a recruitment incentive**

The third theme that emerged from the data analysis was training for internal recruiting. Kobes (2013) identified on-the-job training as an effective workforce development tool. On-the-job training provides companies the opportunity to develop the required skills to address the gap between expected and actual skill sets of workers or applicants. Training programs can include existing employees and potential employees. Liu and Lu (2013) discussed the importance of on-the-job training in human capital growth, further linking on-the-job training to increased productivity and higher earnings. Participants in the current study identified training as an internal recruitment tool for existing employees to transition to higher skilled positions.

All participants agreed that they have a very successful training program, and stated that after every opportunity to recruit from the outside the company recruits from within. Participant 1 stated "we work with our existing pool of employees and provide



the training to develop the needed skills to move into positions that require a higher level of skills. Our seasoned trainers work with the individuals extensively until they can run the machine on their own.” Participant 2 stated “recruiting insiders and providing the additional training lowers the level of uncertainty, which makes an unsuccessful hire less likely. This is particularly important when the organizational costs of a bad hire [are] high.”

Training, which can be a competitive selling point to attract, develop, and retain talent, is imperative in a competitive market where it is difficult to attract good employees. Participant 3 remarked “on-the-job training can be an attractive benefit. It shows that we [the company] are willing to build talent from the inside.” Each participant expressed the importance of having a successful on-the-job training program, pointing out how on-the-job training is critical in developing the skills needed to fill the computer numerical controlled positions (CNC). Participant 2 stated “the CNC positions are critical. This is a position that the entire county is recruiting for.” Participant 3 stated, “when [we] find individuals that are motivated and display a high initiative level, we place them in the on-the-job training program.” Table 3 provides a summary of the word frequencies related to the third theme that emerged during data analysis.

Table 3

*Offer computer numerical controlled training as a recruitment incentive*

Theme 3 nodes	Source	Reference
Internal opportunities	3	10
Hiring from within	3	6
Ensuring training and skills development	3	6
Existing pool	3	8
Total references Theme 1		30

Training practices represent one of the most important ways to assist employees in attaining new knowledge and skills required to align with competitive employment standards. Furthermore, training programs aid in the development of employees, and training provides both new and current employees with the skill set needed to increase productivity, and to maintain a competitive advantage (Talwar & Thakur, 2016).

### **Market Competitive Compensation Strategy**

After interviewing the three participants and review of the company documents and website data, the theme recruitment and compensation strategy emerged. This theme aligned with Humburg & Van der Velden's (2015) assertion of compensation having a significant impact on recruitment, retention of skilled workers. Each participant confirmed the importance of offering competitive compensation to attract talent in a competitive environment. Participant 2 added, "[We] have to offer a competitive salary to compete in the local manufacturing market, with industries like Boeing and Volvo and with new companies entering the market; we have to be able to compete for talent." Participant 3 added, "the company offers great incentives just for coming to work, extra day's off and holidays, there not federal but they are enough."

Compensation strategies that include a competitive salary and benefits package attract talent by communicating information about the organization's value and practices. In addition, providing potential applicants with knowledge of compensation and benefits offered by an organization can provide an advantage in the recruitment process. George (2015) stated that a competitive compensation package was one of the most effective recruitment strategies for knowledge worker recruitment. Verwaeren, Hoye, and Baeten (2016) noted the importance of providing a description of the compensation and benefits during the recruitment phase to increase the attractiveness of an organization. Higher levels of compensations can lead to higher levels of human capital, which in turn can lead to improved organizational performance. Compensation heavily influences employee recruitment and productivity, which increases a company's competitive advantage (Harris & McMahan, 2015). Table 4 is a summary of the word frequencies that emerged during the data analysis process.

Table 4

*Market Competitive Compensation Strategy*

Theme 4 nodes	Source	Reference
Industry competitive salary	3	5
Benefits	4	8
Wages	3	4
Competing for talent	3	6
Total references Theme 1		22

Although compensation was not an overarching recruitment tool, participants stated the need to offer competitive compensation and benefits to attract skilled workers in a competitive environment; Participant 2 further stated, "the market is very tight, and

you have to offer a competitive salary when competing for skilled machine operators.”

These findings are consistent with the research findings of Samimi, Shahosseini, Abasaltian and Shafaghi (2015) identified compensation and benefits as the most important factor to attract knowledge workers. Data on the human capital theory and compensation determine that lower compensation decreases the human capital value, which compensates for human capital distribution. Employers are responsible for offering competitive compensation which offers potential growth for the company and the individual (Koziol, Koziol, Wojtowicz, & Pyrek, 2014).

### **Additional Factors for Successful Recruitment**

During the interviews process and website review of the Youth Apprenticeship Carolina program, the subject of negative industry perception became apparent; each participant discussed the concept of the public’s negative perception of the manufacturing industry and its effect on the attracting workers to the industry. Although negative perception was not identified a recurring theme for recruitment strategies, it was important to share the additional thoughts and perceptions of the participants regarding issues facing the industry. Participant 2 stated, “the industry is not a popular choice among the younger generation; further stating that this generation sees the industry as a lower job level in society and, don’t see the manufacturing industry as a career path.” “However, there been a lot of activity in the state trying to show folks the kind of money they can make in the industry.”

The company’s partnership with the Youth Apprenticeship Carolina program is working to change this negative perception and bring the positive industry opportunities

to the forefront. Chryssolouris, Mavrikios, and Mourtzis (2013) argued that negative public image of the manufacturing careers is one of the main reasons for the industry skills shortage; further noting that society's perception of an industry can influence its ability to attract potential employees. Participant 1 stated, "the industry is no longer smoke stacks and dirty floors, we are innovated, with cutting edge technology offering good wages." Szirmai and Verspagen (2015) described the manufacturing industry as the leading instrument of economic growth and development; however, the industry is less visible in many areas, and that new entrant into the labor market are often less likely to consider manufacturing jobs to be a source of economic security. Each participant stated the needed for greater community involvement to bring the industry to the forefront, to change the public's misguided perception of manufacturing to make the industry more attractive, this would aid in recruitment efforts.

### **Applications to Professional Practice**

Industry leaders could use the finding from this study as a recruitment tool for matching skills to industry requirements, increasing community and industry partnership, and changing the public's negative perception of the manufacturing industry. The findings could also contribute to an increased awareness of the need for the education system and the post-high school training administrators to work with local manufacturers to develop skills in workers needed to support highly technical workforce requirements. The educational process should include identifying and directing students early in their career development with potentials of industry training programs such as an apprenticeship. Manufacturing leaders and educational administrators need better

collaborative planning to help identify the areas of skill deficiencies in the manufacturing realms.

The results from the study could service as a catalyst toward understanding the dynamics of the manufacturing industry and the importance of productivity performance within the industry. Thus there is need to adopt strategies that will encourage public interest in the industry. Leaders should collaborate with policymakers and educators to increase the interest and the likelihood of careers in the manufacturing industry.

### **Implications for Social Change**

Social change implications for industry leaders include developing strategies to increase the prospect of recruiting skilled production workers, mainly within the manufacturing industry; however, the finding of this may be important to other industries in their efforts to recruit skilled workers. Industry leaders might have a better understanding of alternative recruitment strategies, thereby leading to the recruitment of workers with the skills need to meet industry demands. The implications for social change include providing skilled production workers within the manufacturing industry and influencing business leaders to build a valuable workforce. Thereby promoting company productivity and profitability allowing the organization to give back to the community, this, in turn, provides a prosperous and thriving community creating greater economic growth and prosperity. For employees, the social impact of this study might assure a cohort of workers that can promote the prosperity and competitiveness to the industries, increased competitive pay that may increase the prosperity, knowledge, and

skills of the employee, leading to greater employment opportunities, and greater wealth and stability for their families.

### **Recommendations for Action**

Achieving global competitiveness and profitability is an essential goal of industry strategy. The ability of an organization to recruit and retain skilled workers is a necessary component to increased productivity and profitability, as such; industry leaders are continuously searching for skilled workers. The influx of manufacturing companies into the United States and global competitiveness has increased the need for skills to meet industry needs; the study finding may offer strategies that manufacturing leaders can use to improve recruitment practices and build sustainable outcomes. Findings of the study apply to all hiring managers within various industries because regular use of identified recruitment strategies could supply an organization with skilled workers. It is my recommendation that industry leaders use this study as a tool to implement identified recruitment strategies that may lower organizational cost, thereby increasing organizational profitability. My goal is to share the results of this study to broader audiences by publishing the findings of the study in scholarly journals. The finding may also be shared through dissemination at a professional conference, which includes national and international manufacturing & technology conferences and national career development association conference.

### **Recommendations for Further Research**

I used a qualitative single-case study to explore strategies among manufacturing hiring managers to recruit skilled productions workers. The study results provided a clear

premise for future research. The study had a limited sample group, and the study took place at one local manufacturing facility that provided a distinctive viewpoint of the individual experiences of hiring managers to recruit and hire skilled production workers. Each participant gave thorough responses and answered several follow-up questions as a result of the participant's original responses. Recommendations for further research include an expanded study including additional manufacturing facilities would allow further viability for analyzing richer qualitative data from a larger sample in different locations.

Peer-reviewed data on recruitment strategies used in the manufacturing industry was minimal when completing the literature review. An opportunity may exist to conduct similar studies regarding the effectiveness of recruitment strategies among other organizations. The researchers could compare the findings to determine if recruitment strategies are similar or dissimilar to the results of this research. Additional recommendations are to conduct a multi-case study that includes participants from education and community sectors, to explore the effectiveness of partnerships between industry and the community in preparing students for future employment in the manufacturing industry.

### **Reflections**

Obtaining a doctorate, which is one of my life goals, was an emotional and physical challenge. However, this process has been a rewarding learning experience. There were many challenges, setback, disappointments and great sacrifices throughout this journey. Each challenge and setback empowered me to work harder to achieve my academic goals. With each keystroke, I acquired greater knowledge, skills, and self-



confidence, which are invaluable. I have built lifelong relationships with several of my classmates, to whom I have reached out too often for encouragement during the times that I doubted my abilities and wanted to give up. One of the most exciting moments was when I received IRB approval to conduct my research, only to be disappointed with the challenge of securing a Letter of Cooperation. Several months passed, and I had not received a Letter of Cooperation, I began to feel defeated and wanted to give up. To my surprise, a company contacted me shortly after. The participants were excited about participating in my research study and were eager to share their experience on the topic of recruiting skilled production workers. The participant's enthusiasm gave me a renewed drive and determination to succeed.

Upon completion of my study, I plan to use my knowledge and abilities to further the initiative of my non-profit learn-to-earn to re-engage youth and young adults who are off track to graduation or disconnected from both education and work, offering a path to postsecondary credentialing and job skill readiness. After engaging in the research study, I now see how the finding of the study can assist learn-to-earn with establishing relationships with industries to facility the training and recruitment process.

Despite the challenges faced, the data from this research study offers valuable information for the manufacturing and industry leaders, business practitioners, and future researchers. I had no preconceived ideas regarding the study topic, but I understood that challenges existed with the recruitment of skilled workers. I maintained an unbiased approach throughout the research process and relied on the data to address the research question. I was comfortable with all participants, who had abundant knowledge regarding

their business as the interview progressed. The data were through semistructured interviews from the experiences study participants. The study enhanced my understanding of the skilled required for today's manufacturing industry and has stimulated my interest to further my research in this area after graduation.

### **Conclusion**

In 2015, the manufacturing industry accounted for 12.1 percent of GDP in the economy, every \$1.00 spent in manufacturing, added \$1.81 to the U.S. economy, which is the highest economic multiplier of any sector (National Association of Manufacturers, 2015). In spite of this, the industry continues to struggle with recruiting skilled workers resulting in a reduction in productivity and profit loss. Recruiting skills workers is essential to economic growth and competitive sustainability. In this study, I used methodological triangulation to collect data using semistructured interviews and company document review. By using two collection techniques, data saturation occurred when no new information, explanations, or themes emerged from the data. Using data from the interviews, member checking, and documentation, the study findings provided strategies that manufacturing hiring managers can use to improve employee recruitment. After completing the data collection, I analyzed and coded the information until themes emerged. The themes linked to the body of literature and the conceptual framework human capital theory. The four themes that developed from the study were: (a) industry and education partnerships to enhance recruitment efforts; (b) maximizing external recruitment opportunities; (c) offering more on-the-job training to promote internal employees, and (d) competitive compensation strategy. The finding of this study may

assist manufacture leaders with identifying successful strategies to ensure managers are proactive in recruiting and retaining skilled workers to meet industry demand; thereby reduce cost, and increasing productivity and profitability.

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## Appendix A: Email Invitation Letter

Dear (Participant, Name):

My name is Cheryl A. Brown. I am pursuing a Doctorate of Business Administration (DBA) through Walden University. My doctoral study project is *Strategies Manufacture Hiring Managers Use to Recruit a Skilled Workforce*. I am interested in conducting a study in your company to explore strategies that manufacturing hiring managers use to recruit skilled workers. Your participation will be instrumental in providing the required data to best analyze the strategies needed to recruit skilled workers. The study could potentially benefit the manufacturing industry by providing possible strategies to recruit skilled workers. You will be provided with a 1-2 page summary of the study results upon completion of the study.

I would like to conduct an interview with you because you can provide valuable first-hand information regarding recruitment strategies and challenges. Your opinions on the topic of recruiting skilled workers may be vital to the manufacturing industry.

The interviews will take approximately 45- 60 minutes and will be in a conference room within your organization. Your responses to the questions will be kept confidential. You will also be asked to participate in a 15-30 minute follow-up interview to validate the responses to your interview answers (member checking).

Participation in the interviews is voluntary, and you have the right to withdraw from the research study at any time before data analysis.

If you are willing to participate in this research project, please suggest a day and time that is convenient you. If you have any questions or require any additional information, please contact me. My contact information is [REDACTED]

Thank you for your time and consideration.

Cheryl A. Brown  
Walden University DBA student



## Appendix B: Semistructured Interview Protocol Guide

Introduce self to participants.
Present consent form, review contents with participants and have the participant sign the consent form. Answers any questions or concerns participants may have.
Provide Participants a copy of the consent form.
Start audio recording
Note the date and time.
Begin interview with question #1; follow through to the final question.
Watch and take notes of non-verbal cues.
End interview; arrange the second interview for respondent validation (member checking).
Thank the participant(s) for their role in the study. Restate contact numbers for follow up questions and concerns from participants.
Introduce follow-up interview (member checking and set the stage).
Share a copy of the succinct synthesis for each question
Bring in probing questions related to other information that you may have found during the data analysis process
Walk through each question, read the interpretation and ask participants for feedback
Did I miss anything? Or, what would you like to add?
Interview questions:  1. What strategies did you use to recruit skilled production workers?

2. What strategies did you use to mitigate the challenges due to the lack of skills?
3. What strategies did you use to determine which positions were most effective by the skills shortage?
4. What strategies did you use to address the skills shortage resulting from retiring production workers?
5. What strategies did you use to evaluate relevant work experience that you needed in your organization?
6. What strategies did you use to mitigate outsourcing to fill vacant positions?
7. What strategies did you use to assess the skills needed to ensure an adequate supply of skilled production workers?
8. Is there anything else you like to discuss about strategies used to hire talented and skilled workers that I have not addressed in the interview?