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Leadership in Small U.S. Industrial Machining and Fabricating Companies

Christopher Gabers

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Leadership in Small U.S. Industrial Machining and Fabricating Companies

by

Christopher W. Gabers

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Executive Doctorate in Business

In the Robinson College of Business

Of

Georgia State University

GEORGIA STATE UNIVERSITY

ROBINSON COLLEGE OF BUSINESS

2016

ACCEPTANCE

This dissertation was prepared under the direction of *Christopher W. Gabers* Dissertation Committee. It has been approved and accepted by all members of that committee, and is has been accepted in partial fulfillment of the requirements for the degree of Executive Doctorate in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

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ACKNOWLEDGEMENTS

How does one acknowledge, give thanks, and gratitude to so many people that have been a part of this journey. I will simply start by saying…Thank you!! This path would have never been possible without the unconditional support I was afforded by my spouse and children. My Love, you were my rock and guiding light when I needed it most. Additionally, the support I have been blessed with my entire life from my parents, siblings and entire family network continued to give me focus and drive to the finish line.

I would like to give a special thanks to each of my committee members for continually supporting me even when the research seemed like it was unobtainable. I would also like to acknowledge the amazing staff and faculty of the Executive Doctorate in Business program as well each of my classmates. Each participating member of this program became more than just a professor, tutor, director, or, classmate, they became my Georgia State University family.

Sir Isaac Newton famously stated, "If I have seen further it is by standing on the shoulders of giants". To this end, I dedicate this work to all of the "giants" who have come before me as well as the ones who are still with me. Each of you have propelled me to such a time as this. Thank you!!!

Trust in the Lord with all your heart and lean not on your own understanding; in all your ways submit to Him, and He will make your paths straight. Proverbs 3: 5-6

To my children, "*We have forty million reasons for failure, but not a single excuse."* – Rudyard Kipling

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ABSTRACT

Leadership in Small U.S. Industrial Machining and Fabricating Companies

by

Christopher W. Gabers

June 1, 2016

Committee Chair: Conrad S. Ciccotello

Major Academic Unit: J. Mack Robinson College of Business

Given the continuous advances with globalization and overall competition, small U.S. machining and fabrication companies (manufacturing) are required to constantly maintain a competitive advantage to stay relevant (Avolio, 2004; Cascio 1995). To help maintain that competitive advantage, leadership has been extensively researched for many years within multiple segments of the U.S. economy; however, specific focus has been neglected when it comes to transactional and transformational leadership styles within small U.S. industrial machining and fabricating companies.

The focus of this research centers on three small industrial machining and fabricating businesses in the manufacturing sector. Distributing the multifactor leadership questionnaire (MLQ) this research investigates the leadership style of each businesses leader. The MLQ specifically focuses on the leadership styles that the leaders self-assess between transactional and transformational leadership and then leverage that information when the employees provide a 360-loop feedback, which rates the leader. The MLQ is the gold-star standard to evaluate transactional and transformational leadership (Bass & Avolio, 2000; Avolio & Bass, 2004). The MLQ additionally provides a rating on the outcomes of extra effort, effectiveness, and satisfaction from both the

subordinates and leader, which this dissertation will focus on as well. Previous studies provide a solid foundation on transactional and transformational leadership within alternative environments other than small U.S. industrial machining and fabricating companies, which is the focus of this dissertation.

This dissertation presents the findings that employees in an industrial environment would exhibit higher levels of extra effort, effectiveness, and satisfaction, provided the leader espouses more transformational leadership. Results revealed transformational leadership was significantly related to extra effort, effectiveness, and satisfaction. To the contrary, results revealed that transactional leadership was not significantly related to extra effort, effectiveness, and satisfaction. Additional results substantiated the findings listed above by conducting a Person correlation that showed transformational leadership scores were positively related to transactional leadership scores. To substantiate the study further results were compiled by conducting three fixed effect regressions analyzing the independent variables of transactional and transformational leadership scores from the employee self-reports, as well as one-sample *t*-tests that compared this studies MLQ results to the U.S. normative samples.

I CHAPTER 1: INTRODUCTION

Paramount to any organization's success is maintaining a level of leadership to achieve business longevity while striving to maximize shareholder value. Earlier research has advanced the knowledge that organizations with higher value-creating individuals (Dutton 2003) will consistently outperform comparable firms, while other studies have shown (Thakor 2000), that the individuals with the highest value-creating ability are consequently the individuals with the "greatest energy and enthusiasm, and are the happiest at work" (Cameron et al, 2006). Leadership contributes to this creation and cultivation of value-creating individuals by achieving the outcomes of extra effort, effectiveness, and satisfaction.

In this research, two main theories are highlighted and a highly respected leadership questionnaire is the method of studying these leadership styles that may be beneficial within small U.S. industrial machining and fabricating companies. The theories of transactional and transformational leadership (Burns 1978) are the focus in this dissertation. The questionnaire survey instrument will be the MLQ (Bass & Avolio 1990).

This dissertation investigated the leadership styles within the context of an industrial manufacturing environment. Three privately owned companies were analyzed each falling within the industry of manufacturing and the standard industrial classification of small machining and fabricating companies. The results will help provide insight to the academic community as well provide a future understanding for small U.S. industrial machining and fabricating business leaders on leadership styles and their relationship to extra effort, effectiveness, and satisfaction.

This dissertation engaged in a research design summarized in Table 1 (Mathiassen et al., 2012). Each of the elements stated in the design is reviewed and elaborated in greater detail in the succeeding sections of this dissertation. The research investigated the leadership styles of transactional or transformational within three industrial machining and fabricating companies as well as the subordinates that are led each day to examine which leadership style produces the outcomes of extra effort, effectiveness, and satisfaction. The problem setting was the U.S. industrial machining and fabricating environment, requiring continual focus on how to promote extra effort, effectiveness, and satisfaction within the organization. The area of concern was leadership in small U.S. industrial machining and fabricating companies. The research question was:

> RQ: Which leadership style (transformational or transactional) is more beneficial within small U.S. industrial machining and fabricating companies to achieve the outcomes of extra effort, effectiveness, and satisfaction?

Table 1 Research Design

P (Problem setting)	Small U.S. industrial machining and fabricating companies ensuring extra effort, effectiveness, and satisfaction from subordinates.
A (Area of concern)	Leadership in small U.S. industrial machining and fabricating companies
RQ (Research Question)	Which leadership style (transformational or transactional) is more beneficial within small U.S. industrial machining and fabricating companies to achieve the outcomes of extra effort, effectiveness, and satisfaction?
F (Framework)	Transactional & Transformational Leadership
M (Method)	Quantitative (Multifactor Leadership Questionnaire)
CA (Contribution to A)	• A: A quantitative analysis on leadership in small U.S. industrial machining and fabrication companies. • P: Guidance for other small U.S. machining and fabricating leaders to improve extra effort, effectiveness, and satisfaction within the organization.

Adapted from (Mathiassen et al., 2012)

II CHAPTER 2: INDUSTRY CONTEXT

On February 12th, 2013 speaking to the American people during the State of the Union address, President Barack Obama stated, "after shedding jobs for more than 10 years, our manufacturers have added about 500,000 jobs over the past three" (The White House 2013). This statement was welcome news to many Americans that rely on a strong domestic manufacturing economy. The Economic and Statistics Administration (ESA) within the United States Department of Commerce stated in the annual executive summary in 2012, "The role of the manufacturing sector in the U.S. economy is more prominent than is suggested solely by its output or number of workers. It is a cornerstone of innovation in our economy: manufacturing firms fund most domestic corporate research and development, and the resulting innovations and productivity growth improve our standard of living" (ESA 2012). The following information underscores the importance of the research that this dissertation set out to investigate. Manufacturing is still undeniably important to the well being of our nations macro and microeconomics within the global markets. The leadership that is utilized within these industrial-manufacturing companies is important because it helps protect and promote the continuous success that our nation relies upon (Scarborough, 2001)

II.1 The Eighth Largest Economy

Measured through the lens of the gross domestic product (GDP), the United States dominates the world in producing goods and services. Additionally, the manufacturing sector output has grown by over eighty-three percent between the years of 1992 to 2012, whereas this growth has equated to the U.S. manufacturing sector producing $2.03

trillion of value added in 2014 and representing the equivalence of the 8th largest economy in the world (The Manufacturing Institute, 2014).

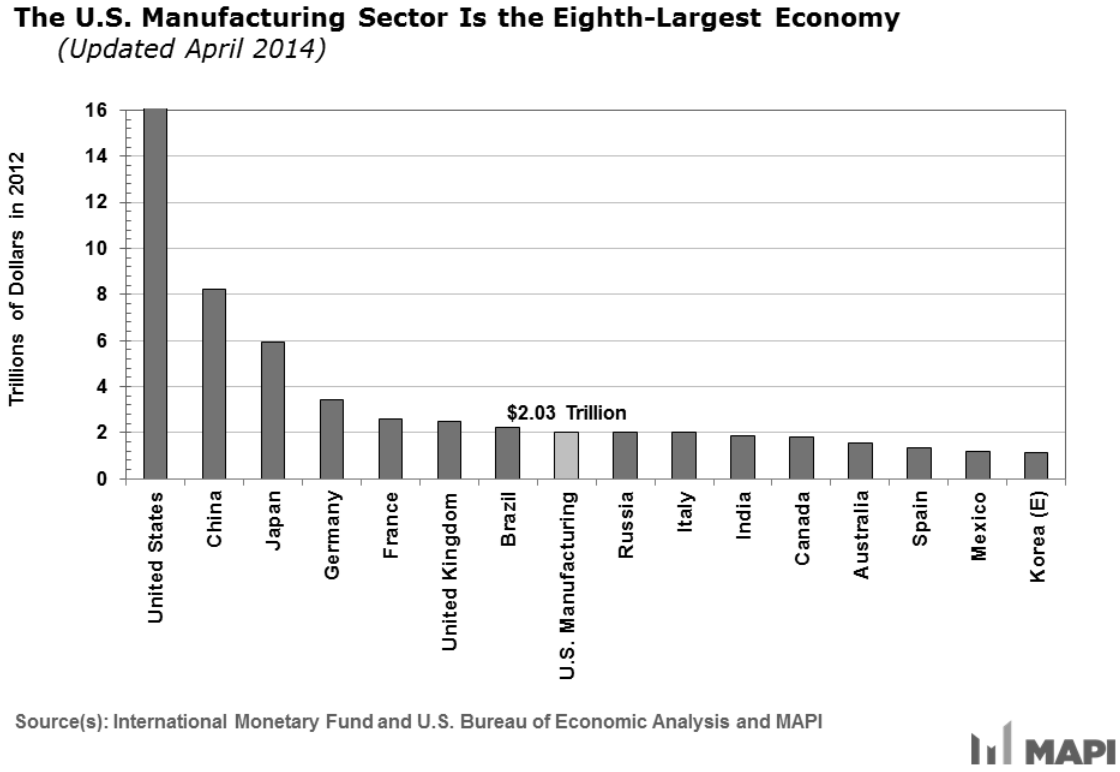

Figure 1 The Eighth Largest Economy: The U.S. Manufacturing Sector

II.2 Industrial Sector Dominated by Small Companies

Updated in 2014 by the U.S. Census Bureau, the vast majority of employees are found within organizations that have fewer than 20 employees. The three participating firms for this research would be represented within that categorization. Figure 3 and table 2 represents the overall importance of small manufacturing firms within the U.S. economy. As the table states, over seventy-five percent of total firms are captured within the classification of having less than 20 employees. Additionally, organizations that are

typically smaller in organizational size have a closer nit "family" environment in which transformational leadership could thrive.

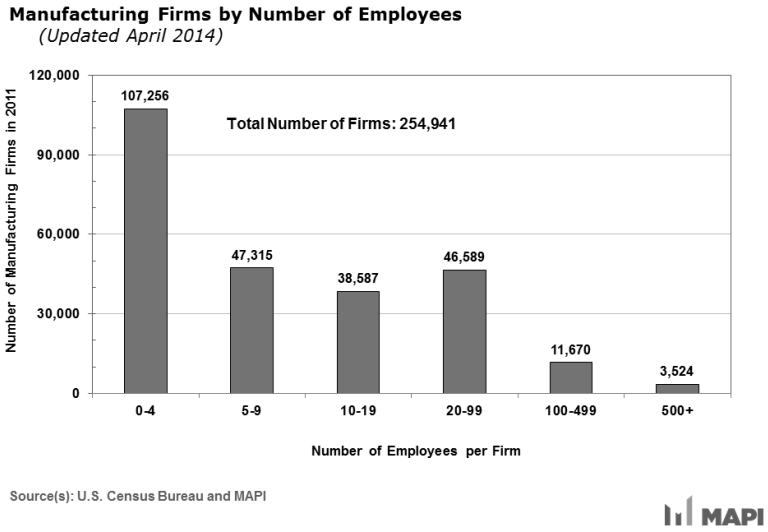

Figure 2 Industrial Employment: Small Company Dominance

Table 2 Manufacturing firms by # of employees and percentage of total firms

Number of Employees	Number of Firms	Percentage of Total Firms
0-4	107,256	42.07%
5-9	47,315	60.63%
10-19	38,587	75.77%
20-99	46,589	94.04%
100-499	11,670	98.62%
500+	3,524	100.00%

II.3 Manufacturing Multiplier Effect

The multiplier effect is one of the most debated and argued economic data statistics in government, however, it is one of the most important data points that an economy can look towards to improve the overall economy. The American Heritage New Dictionary of Cultural Literacy defines the multiplier effect as, "an effect in economics in which an increase in spending produces an increase in national income and

consumption greater than the initial amount spent." To this end, industrial manufacturing shows to be an important aspect to the overall success to the American economy. The manufacturing segment has the highest multiplier effect compared to any other sector.

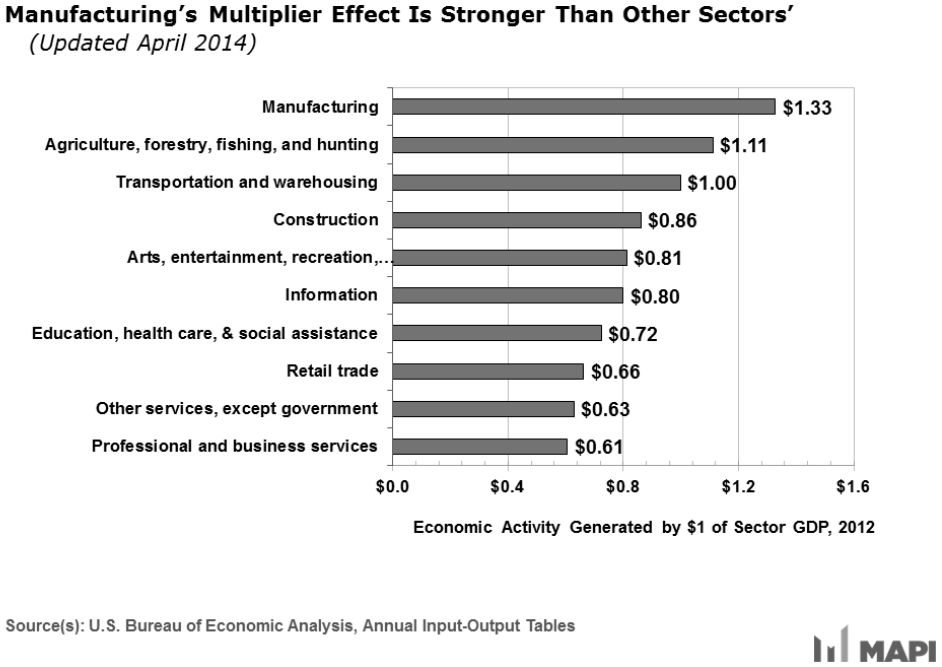

Figure 3 Multiplier Effect: Industrial Manufacturing

II.4 U.S. Manufactured Products in the U.S. Economy

Industrial machining and fabricating companies are the building blocks of the overall manufacturing economy. The products that are domestically produced are by far more utilized throughout the U.S. economy compared to any other sector within the economy. Figure 4 depicts the major percentage advantage that manufacturing goods have in being used within the domestic economy.

Figure 4 Goods Manufactured Domestically & Utilized In U.S. Economy

II.5 Improves Living Standards

Technological advancements are regularly praised for their achievements in making our lives better, however, these technological shifts are additionally found within the environment of industrial manufacturing companies. Manufacturing continues to improve the living standards of all Americans as well as people around the globe. "Strong productivity gains, rapid advances in innovation, and international competition have led to deflation in manufactured goods" (The Manufacturing Institute, 2014), which in return provides individuals the power to buy more for less while not forgoing quality of the product. Figure 5 shown below provides the optical importance on why manufacturing must be an important priority for our country and our business leaders.

Domestic manufacturing allows for the upward economic mobility of individuals by allowing them to participate in the global economy. This study provides the importance of transformational leadership on helping continue to ensure that manufacturing remains a vital option of American employment and in return a continuous increase in our living standard.

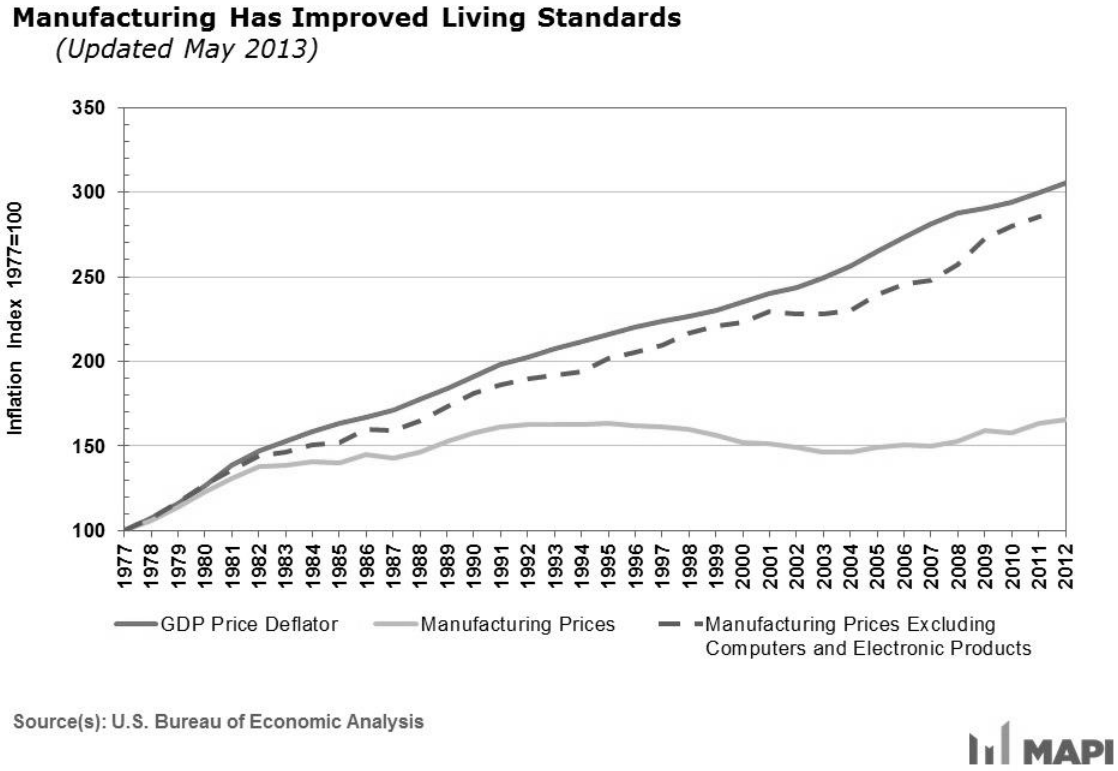

Figure 5 Improved Living Standards

II.6 Industry Pays Higher Average Compensation

Given the previous paragraph dealing with the manufacturing sector improving individual standards of living it would only make sense that the data would show that the manufacturing sectors pay higher average compensation. "Manufacturing employees

earn higher wages and receive more generous benefits than other working Americans. In December 2011, manufacturing employers paid $32.93 per hour in wages and benefits, while all employers in the economy paid about $30.44 per hour"(The Manufacturing Institute, 2014).

II.7 Employment Manufacturing

This dissertation focuses on companies that would be represented within a standard industrial classification of manufacturing most commonly known as fabricating and machining companies. These companies would be within the classification shown in figure 7 as fabricated metal products. This subcategory is only surpassed by the food, beverage, and tobacco products in relation to the number of individuals that are employed. Additionally, these fabricating companies represent many of the small organizations that employ fewer than 20 employees.

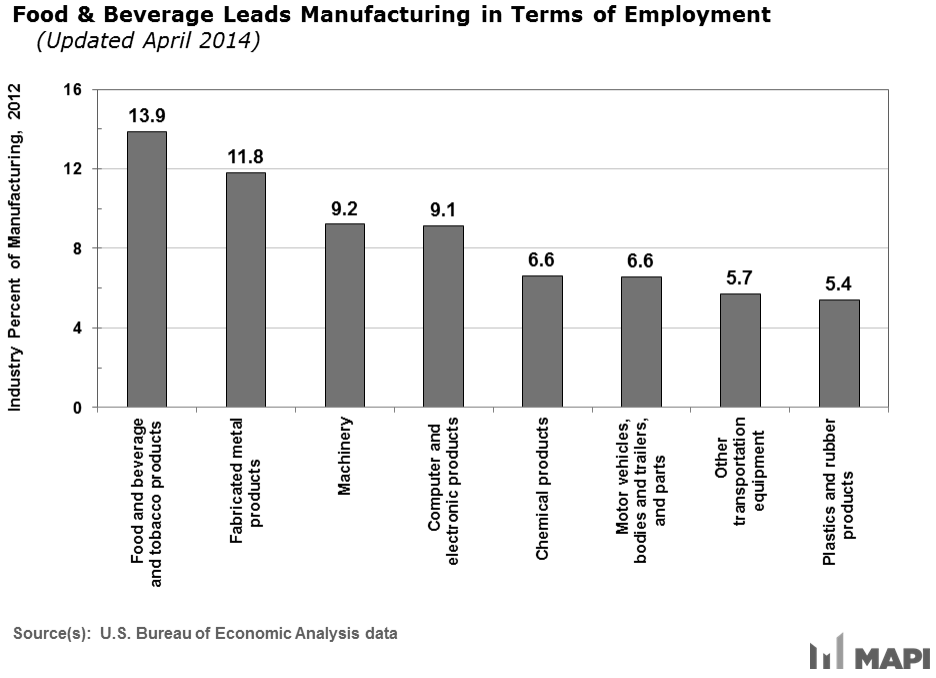

Figure 6 Food & Beverage [Only] Leads Manufacturing in Terms of Employment

II.8 Industry Supports Millions Outside of Sector

Just as important as the manufacturing sector employees millions of Americans, the sector additionally supports millions of U.S. jobs that are not within the manufacturing sector. "More than one in seven U.S. private sector jobs depends on the U.S. manufacturing base", and "manufacturing supported an estimated 17.5 million jobs in the United States in 2011; this includes 12.0 million jobs directly within manufacturing and 5.5 million jobs in sectors such as professional services (accounting, legal, consulting, etc.), wholesaling, transportation, agriculture, and F.I.R.E. (finance, insurance, and real estate"(Manufacturing Institute, 2014).

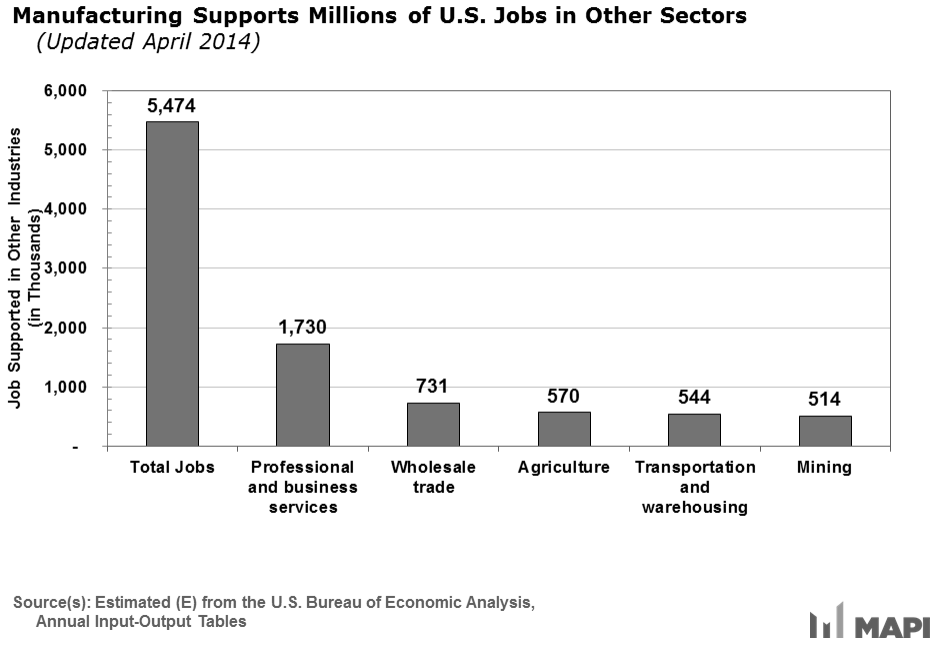

Figure 7 Manufacturing Supports Millions of U.S. Jobs in Other Sectors

II.9 Industry Context Summary

The previous information and data helps us understand that the industrial manufacturing sector is a vital aspect for the U.S. economy. It is also relied upon by millions of Americans for employment and quality of life. To this end, this dissertation focuses on this sector given its overall importance to our way of life and focuses on the leadership styles that leaders within this sector utilize with their subordinates. This research will add to the leadership literature. It will also provide guidance for the practitioner regarding how leadership in an industrial environment can impact employee extra effort, effectiveness, and satisfaction.

III CHAPTER 3: LITERATURE REVIEW

In this section, the two main leadership styles that are represented by the Multifactor Leadership Questionnaire are reviewed. To better understand what the questionnaire is, an overview of the leadership styles is presented as well as a review of previous research studies. Many of the previous studies utilized the MLQ in alternative sectors other than a U.S. industrial machining and fabricating environment which is the focus of this dissertation.

III.1 Transactional & Transformational Leadership

Leadership experts agree that the type of leadership plays a role in employees' extra effort, effectiveness, and satisfaction. Studies have shown that the leader with more of a transformational leadership style "generate[s] higher commitment in their followers (Avolio, 1999; Avolio & Yammarino, 2002; Bass, 1998); similarly, "Fuller, Patterson, Hester, and Stinger (1996) reported in a meta-analysis greater follower compliance if their leaders were more transformational then transactional" (Mind Garden, 2004).

James MacGregor Burns (1978) proposed the theory of transactional and transformational leadership within the context of political science with the publication of his groundbreaking book *Leadership.* Within it, Burns states the following: "Essentially the leaders' task is consciousness-raising on a wide plane…the leader's fundamental act is to induce people to be aware or conscious of what they feel – to feel their true needs so strongly, to define their values so meaningfully, that they can be moved to purposeful action." Burns professed that leadership could successfully achieve organizational change and accomplish goals while additionally creating a paradigm shift within the people that were leading and being led.

Concurrent with the views of Burns, Bernard Bass (1990) viewed transformational leadership as when an individual, "broaden[s] and elevate[s] the interests of their employees, when they generate awareness and acceptance of the purposes and the mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group."

Transactional Leadership is more *quid pro quo,* when the leader expects a particular outcome and this outcome only assures reward and praise. Burns expounded upon this form of leadership by stating, "[transactional] leadership is the reciprocal process of mobilizing, by persons with certain motives and values, various economic, political, and other resources, in a context of competition and conflict, in order to realize goals independently or mutually held by leaders and followers. The nature of those goals is crucial. They could be separated but related; that is, two persons may exchange goods or services or other things in order to realize independent objectives." Transactional leadership is the more antiquated and the lesser used leadership style of the two but it is still necessary in specific circumstances. "In a historical sense, it is grounded solidly in the era of industrialization and modernism, and, in this way, it highlights leadership's past" (Zacko-Smith 2010). Burns believed that the leader that exuded a transactional leadership style was unable to achieve aspirations of the individual(s) being led. "Perhaps industrial leaders operate in a more structured setting and hence exhibit categorically different leadership" (Sivanathan & Fekken 2002). Additionally, it has been shown that "a manufacturing environment leans itself well to transactional leadership" (Sandilands 2012), when the organization is large and "well-established…whose methods of operation require little in the way of ongoing change. An

organization with fixed operations that must be performed in a specific manner each time, such as a manufacturing company, will benefit from transactional leadership style" (Sandilands 2012), whereas, "previous data indicate that transformational leaders also use active transactional-style leadership to achieve their objectives" (Avolio et al. 1998).

Multiple research studies on transformational and transactional leadership styles have been performed throughout the past 30 years. Yammarino and Bass (1990) conducted a research on the "conceptual classification of transformational leadership (Lowe et al. 1996), in which the dependent variables were extra effort, effectiveness, and satisfaction. This research was conducted within the context of a military environment at the U.S. Naval Academy, where 186 officers and 793 subordinates participated in the study. The overall focus of the study "was to evaluate empirically the nature of leader-follower interactions as conceptualized here based on subordinates' views of their leaders" by utilizing the MLQ. Table 3 depicts the nine leadership scales created for their study as well as the three outcome variables.

Table 3 Leadership Scales and Outcome Variables (Yammarino, F. J. & Bass, B. M. (1990)

Transformational Leadership Scales	
Charisma (six items)	"I am ready to trust him or her to overcome any obstacle"
Individualized Consideration (six items)	"Treats me as an individual rather than just a member of the group"
Intellectual Stimulation (six items)	"Shows me how to think about problems in new ways"
Inspirational Leadership (six items)	"Provides vision of what lies ahead"
Transactional Leadership Scales	
Contingent Promises (three items)	"Talks about special commendations and promotions for good work"
Contingent Rewards (three items)	"Personally pays me a compliment when I do good work"
Active Management-by-Exception (four items)	"Would reprimand me if my work was below standard"
Passive Management-by-Exception (four items)	"Shows he/she is a firm believer in 'if it isn't broke, don't fix it."
Outcome Variables	
Extra Effort	"Four items were used to measure how much extra effort subordinates were willing to put forth in their jobs. For example, "I do more than I expected to do in my work". Items from this scale used the same response format as the leadership items."
Satisfaction	"Two items were used to measure subordinates' satisfaction with their leaders. For example, "In all, how satisfied were you that the methods of leadership used by this officer were the right ones for getting your unit's job done?" Response alternatives were on a 5-point format ranging from "very dissatisfied" (0) to "very satisfied" (4)"
Effectiveness	"Four items were used to measure the effectiveness of the focal officer. For example, "How effective is this officer in meeting the job-related needs of his or her subordinates?" Response alternatives were on a 5-point format ranging from "very dissatisfied" (0) to "very satisfied" (4)"

Adapted from Yammarino, F. J. & Bass, B. M. (1990). Transformational leadership at multiple levels of analysis. Human Relations, 43, 975–995.

The results of their study were similar to previous research that had been "reported by Yammarino and Bass (1990) for the Naval War College sample and by Bass and Avolio (1990) for other samples using the MLQ." Table 4 showcases a portion of the research descriptive statistics.

Table 4 Descriptive statistics (Yammarino, F. J. & Bass, B. M. (1990)

Measures	Mean (M)	Standard Deviation (SD)	MLQ Scale Range
Transformational			
Charisma	2.48	1.26	4.00
Individualized consideration	2.66	1.17	4.00
Intellectual stimulation	2.63	1.15	4.00
Inspirational leadership	2.45	1.15	4.00
Transactional			
Contingent promises	1.88	1.38	4.00
Contingent rewards	2.59	1.52	4.00
Active management-by-exception	2.92	1.29	4.00
Passive management-by-exception	2.47	1.10	4.00
Outcomes			
Extra Effort	2.79	.99	4.00
Effectiveness	2.81	1.06	4.00
Satisfaction	3.01	1.59	4.00

Adapted from Yammarino, F. J. & Bass, B. M. (1990). Transformational leadership at multiple levels of analysis. Human Relations, 43, 975–995.

Bass (1985) conducted a prior research on the correlation of leadership styles compared to the performance of satisfaction. This was additionally conducted within the context of a military environment. Two years later, Bass joined research forces with David Waldman and Walter Einstein to conduct a study (Waldman et al. 1987) that concluded that, "transformational leadership behaviors…and contingent reward behavior

had positively and significantly improved individual performance and associated with the job satisfaction of subordinates"(Macit, 2003). Bruce Avolio with the additional support of Waldman and Einstein conducted a game simulation (Avolio et al., 1988) with MBA students on the potential effects of transformational leadership. The game was designed to represent "a complex simulation that exposes students to opportunities and problems typically confronting a medium-sized publically held manufacturing corporation". Similar to Yammarino & Bass (1990) the study utilized the MLQ as well as a leadership scale that is depicted in Table 5. However, Yammarino & Bass's study focused on the outcome variables of Extra Effort, Satisfaction, and Effectiveness, whereas, Avolio (1988) concentrated on the descriptive statistics rather than the outcomes of the MLQ.

Table 5 Leadership Scales (Avolio et al. 1988)

Transformational Scale	
Charisma	"I am ready to trust his or her capacity to overcome any obstacle"; "makes me enthusiastic about assignments"
Individualized Consideration	"gives personal attention to neglected members"; "delegates responsibilities to me to provide me with learning opportunities"
Intellectual Stimulation	"enables me to think about old problems in new ways"; "has forced me to rethink some of my own ideas which I had never questioned before"
Transactional Scale (active)	
Contingent Reward	"tells me what to do if I want to be rewarded for my efforts"; arranges that I get what I want in exchange for my efforts"
Inactive Leadership	
Managing-by-Exception	"is content to let me do things the same way as always; takes corrective action when I make mistakes"

Adapted from (Avolio et al. 1988) Transformational leadership in a management game simulation. Group & Organization Studies, 13(1), 59-80.\

The results of the study demonstrated that "a moderately strong relationship was found between the transformational and active transactional leadership shown by team leaders". Table 6 depicts the descriptive statistics that the research produced.

Table 6 Descriptive Statistic (Avolio et al. 1988)

Measures	Mean (M)	Standard Deviation (SD)	MLQ Scale Range
Leadership			
Charisma	2.10	.69	4.00
Individualized consideration	2.29	.52	4.00
Intellectual stimulation	2.10	.53	4.00
Contingent reward	2.00	.41	4.00
Management-by-exception	2.27	.41	4.00

Adapted from (Avolio et al. 1988) Transformational leadership in a management game simulation. Group & Organization Studies, 13(1), 59-80.

In 1992, research (Tucker et al.,) was conducted within the confines of an academic setting to determine "whether transformational leadership accounts for more of the variance" (Macit 2013) in the following areas:

- Subordinates' perceived satisfaction with their leaders
- Subordinates' perception of the leader effectiveness, and
- Subordinates' perception of their extra effort beyond that accounted for by transactional leadership

Their findings showed that contingent reward "was associated with satisfaction, effectiveness, and extra effort. However, such transactional leadership augmented by transformational leadership, generated perceived increase of satisfaction, effectiveness, and extra effort".

William L. Koh, Richard M. Steers, and James R. Terborg conducted a research (Koh et al., 1995) study in Singapore regarding the context of transformational and transactional leadership and how these leadership styles affected teacher satisfaction. The study examined the following attributes:

- "The influence of transformational leader behavior by school principals as it related to organizational commitment"
- "Organizational citizenship behavior"
- "Teacher satisfaction with leader"
- "Student academic performance"

The study found that transformational leadership "had significant add-on effects to transactional leadership in the prediction of organizational commitment, organizational citizenship behavior, and teacher satisfaction".

An additional study (Sillins, 1994) compared the causes and effects of transformational leadership and transactional leadership within the context of schools located in Canada. Within their research it was found that "transformational leadership accounted for a significant incremental effect above that of transactional leadership in bringing about enhanced school, teacher, program and instruction, and student outcomes".

Further studies were conducted within the healthcare system (Taylor and Klafehn (1995), Avolio et al., (1995), Medley and Larochelle (1995), and Bycio et al., (1995), specifically nurse executives and staff nurses, indicating that utilizing more of the traits that are associated with transformational leadership compared to transactional leadership

had a “positive and significant relation with transformational leadership behaviors and contingent reward leadership behavior” (Macit 2013).

Flin & Yule (2004) found that, “the organizational structure and cultures typical of industrial workplaces do not match those of healthcare organizations”. They continued by stating that, “in an industrial setting there are, of course, both formal and informal leaders. But on a power plant, if one asks a team or a department “who is the leader?”, an unequivocal response is normally given. In a hospital, the formal leadership hierarchy is less well defined”.

Religious leadership research (Bass 1990) showed that ministers that exude transformational leadership translated into the church experiencing higher membership as well as attendance. Complementary to the previous studies, research (Aminuddin 1998) depicts that job satisfaction among associates and subordinates increased due to transformational behavioral leadership within the context of academia.

Transformational leadership has been researched and defined as being a beneficial leadership style throughout the years. It has been substantiated multiple times within scholarly journals (Lowe et at. 1996). This dissertation sought to research whether transformational or transactional leadership validated the previous studies that demonstrated that transformational leadership promotes the outcomes of employee extra effort, effectiveness, and satisfaction, within the environment of an industrial manufacturing setting.

III.2 The Manufacturing Setting

As previously stated, multiple environments and settings have been studied utilizing the MLQ including but not limited to healthcare providers, military officers,

academics, and religious leaders, while leaving an opportunity for research in an industrial manufacturing setting.

The manufacturing environment has evolved over the past few years due to multiple technological and engineering advancements. To this end, the educational landscape of the manufacturing environment has evolved as well. Figure 8 presents the trend of how the manufacturing industry is becoming more educated, however, continuous progress must continue to advance. On September 1, 2016 the president of The National Association of Manufacturers (NAM) stated, "manufacturers are dealing with the most dramatic workforce crisis in U.S. history. Eighty percent of manufactures report shortages of qualified workers. While manufacturing provides good, family-supporting jobs with the highest average salary among all business sectors, young people, their parents and teachers don't know about manufacturing's promising career opportunities. The education and business communities must work more closely together to align educational programs with the academic and occupational skills necessary for 21st century manufacturing careers."

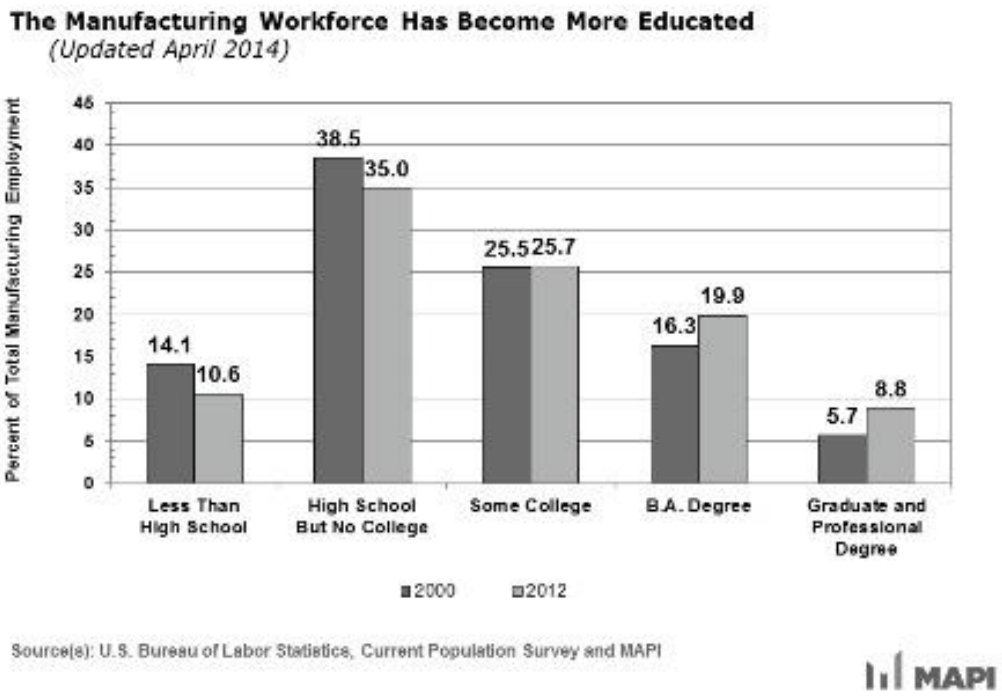

Figure 8 Manufacturing Workforce Becoming More Educated

Given the importance to this industry setting and the rising levels of education it would be wise to know how the leaders of tomorrow's manufacturing workforce can produce the highest levels of employee's extra effort, effectiveness, and satisfaction.

IV CHAPTER 4: METHODOLOGY

Previous studies have shown the rigor and importance of the MLQ by measuring the dependent variables (outcomes) of employee extra effort, effectiveness, and satisfaction. This dissertation adds to the important body of research that has been previously done and suggests there is room for additional research. As the previous section made clear, multiple studies have been conducted within alternative environments while an U.S. industrial environment could benefit with additional research and focus, which was the goal of this dissertation.

IV.1 Multifactor Leadership Questionnaire

The Multifactor Leadership Questionnaire (MLQ) has been the standard framework to measure leadership styles for nearly thirty years. Yukl (1994) stated, "Most of the research…has involved the use of a questionnaire called the Multifactor Leadership Questionnaire to measure various aspects of transformational and transactional leadership."

IV.2 Instrumentation

Each item on the MLQ is answered using a 5-point Likert scale with anchor points of "Not at all" and "Frequently, if not always." The MLQ5x consist of 45 items, 36 of which produce information dealing with nine leadership factors and three outcomes dealing with leadership. Three leadership outcome effects are derived from the remaining 9 items. This study did not use the non-leadership items classified as Lasissez-faire due to the focus of this study being between transformational leadership and transactional leadership as well as emphasizing the results of the leadership outcomes of Extra Effort, Satisfaction, and Effectiveness.

Table 7 depicts the MLQ leadership constructs (Weinberger, 2004; Avolio, Bass, & Jung, 1995; Bass & Avolio, 2000).

Table 7 Constructs, Factors, and Scales of the MLQ5x

Leadership Construct	**Leadership Factor**	**Scale (Number of items / Scale)**
Transactional Leadership	Contingent Reward Management-by Exception	Contingent Reward (4) Management-by Exception (Active) (4) Management-by-Exception (Passive)(4)
Transformational Leadership	Intellectual Stimulation Individualized Consideration Charisma Inspirational Motivation	Intellectual Stimulation (4) Individualized Consideration (4) Idealized Influence (Behavior) (4) Idealized Influence (Attributed) (4) Inspirational Motivation (4)
Leadership Outcomes	Satisfaction Extra Effort Effectiveness	Satisfaction (2) Extra Effort (3) Effectiveness (4)

Adapted from (Weinberger, 2004; Avolio, Bass, & Jung, 1995; Bass & Avolio, 2000).

To better understand the *constructs, factors and scales* of the MLQ, Table 8 provides the leadership factors and the corresponding leadership behavior by outlining the definitions of the leadership factors.

Table 8 Leadership Factor Definitions

Leadership Factor	Leadership Behavior
Contingent Reward	The leader gives followers a clear understanding of what needs to be done and/or what is expected of them, then arranges to exchange rewards in the form of praise, pay increase, bonuses, and commendations.
Management-by-Exception (Active & Passive)	When it is active, the leader monitors the followers' performance and takes corrective action when mistakes or failures are detected. When it is passive, the leader intervenes only if standards are not met or if something goes wrong.
Idealized Influence (Attributed)	The leader has the followers' respect, faith, and trust. The followers want to identify with the leader. The leader shows determination and conviction.
Idealized Influence (Behavior)	The leader shared a vision and sense of mission with the followers. Radical, innovative solutions to critical problems are proposed for handling followers' problems.
Inspirational Motivation	The leader increases the optimism and enthusiasm of followers. The leader communicates with fluency and confidence using simple language and appealing symbols and metaphors.
Intellectual Stimulation	The leader encourages new ways of looking at old methods and problems. The leader emphasizes the use of intelligence and creativity. The leader provokes rethinking and reexamination of assumptions on which possibilities, capabilities, and strategies are based.
Individualized Consideration	The leader gives personal attention to followers and makes each feel valued and important. The leader coaches and advises each follower for the followers' personal development.

Adapted from Bass, B. M. (1997a) 'Personal Selling and Transactional/Transformational Leadership', Journal of Personal Selling & Sales Management

IV.3 Validity of the Multifactor Leadership Questionnaire

As previously mentioned the MLQ is one of the most widely used instruments to gauge the transactional or transformational leadership style of leaders while achieving the dependent variable outcomes of extra effort, effectiveness, and satisfaction of the individual being led. However, the validity of this survey is not based on its expansive use alone.

MLQ validity was significantly substantiated by Antonakis et al. (2003). The study tested two massive samples of size 3368 (N=3368) and 6525 (N=6525). Multiple studies show (Antonakis et al., 2003) "the predictive validity of the theory has been the focus of dozens of studies" (Avolio, 1999; Bass 1998). Studies include, "four meta-analyses (DeGroot, Kiker, & Cross, 2000; Dumdum, Lowe, & Avolio, 2002; Gasper, 1992; Lowe et al., 1996) that have provided substantial support for the predicted relationships using both subjective and objective measures of performance. To our knowledge, there has been little or no controversy surrounding the predictive nature of the theory." Given the validity utilizing the MLQ, this study built upon the previous research by investigating leadership in small U.S. industrial machining and fabricating companies.

V CHAPTER 5: SAMPLES, DATA COLLECTION, ANALYSIS & RESULTS

V.1 Samples

This dissertation utilized the data of three corporations all within the United States and all categorized as small U.S. machining or fabrication companies within the manufacturing sector. Each company was geographically located within the Southeast. Each participating corporation's employees completed the MLQ rater form evaluation and the direct leader of the employees completed the leader form as well. Table 9 depicts each of the company participants, description, location, and pertinent information as well as each company's specific industrial environment that they represent.

Table 9 Participants Organizational Structure, Size, & Characteristics

Company Name	Description of Operation	Number of Potential Raters	Number of Leader(s)	Location of Operation	Location of Customer Base
Manufacturer #1	High Tech Machining Company	2	1	Southeast	Continental U.S.
Manufacturer #2	Precision Machining Company	8	1	Southeast	Continental U.S.
Manufacturer #3	Custom Machining and Fabrication Company	9	1	Southeast	Continental U.S.

V.2 Data Collection & Analysis

Data analysis focused on the distribution, implementation, results and analysis of the MLQ. Focus was also on the individual MLQ results of each company by reviewing and analyzing the scores of each organization compared to their corresponding leader. Additionally, comparison to the MLQ Normative Samples supplied by Mind Garden is reviewed. Mind Garden Inc. is the official organization that authorizes the use of the MLQ and its corresponding research data.

Quantitative data from the MLQ was entered into SPSS 22.0 for statistical analysis. The data was checked for accuracy, missing cases, and the presence of outliers. The presence of outliers was examined by computing standardized values for each dependent variable (i.e., extra effort, effectiveness, and satisfaction).

Descriptive statistics were computed and reported for each of the study variables. Means and standard deviations were computed for continuous variables. Frequencies and percentages were computed for categorical variables.

First, the manufacturers MLQ scores will be showcased and reviewed by comparing the subordinates score to their direct leaders self-rated score. Additionally, a percent deviation is provided to underscore the level of variation there was between the leader and the subordinates. Second, a Pearson correlation is conducted to show the relationship between transformational leadership and transactional leadership (see figure 1). A Pearson correlation analysis was selected because one of the aims of the study is to assess the relationships between variables. When the researcher wants to determine the strength and direction of the relationship between two variables, a Pearson correlation analysis is appropriate. Third, three fixed effect regressions were completed to help support and validate the forth and final results of the multiple linear regressions. Fixed effect regression analysis and multiple linear regression analysis were selected because the research involves assessing the predictive relationship between multiple independent variables and a dependent variable. Specifically, fixed effect regression analysis is appropriate when the researcher wants to examine the relationships between multiple independent variables and a dependent variable while controlling for a categorical grouping variable. In this study, fixed effect regressions were used to assess the

relationships between transformational and transactional leadership scores and extra effort, effectiveness, and satisfaction, while controlling for company. Then, multiple linear regressions were conducted to assess the nature of these relationships regardless of company.

V.3 Results

V.3.1 Manufacturer's MLQ Scores

Manufacturer # 1

The organization was founded in 1995 and has continued to grow in size, sales, and customer base since its inception. They provide solid carbide products and tools, solid carbide blanks, and different levels of grinding services sold direct to the customer. The organization currently has four full time employees while their high-tech production equipment list continues to increase in volume as well as sophistication.

The organization was the smallest organization researched in terms of amount of employees; however, the product that they produce is utilized by the most advanced organizations in aerospace and medical equipment. Due to the customers that they support the manufacturing environment is highly organized and clean. The organization's leader promotes an open door policy to each of the employees. If any of the employees are having issues either personal or professional, the leader promotes that they share and helps to find any possible solution. The environment on the floor is that of individuals working on individual tasks but the sense of a collective team is present, striving to accomplish the production requirements for their customers. Each of the employees is highly trained and skilled to operate the required machines to produce the organization's product. Table 10 reports the MLQ scores that the employees and the

leader answered. In Manufacturer #1 in almost very category the leader scored higher than the employee's both in transformational and transactional. In this aspect it would be suggested that given the micro size of the organization that the leader views himself more as a father figure rather than an employer. To this end, he views his leadership style more as situational and utilizes both but at a more concentrated level than the employees concur.

Table 10 MLQ scores of Manufacturer # 1

Manufacturer # 1					
Characteristic	Scale Name	Subordinate Scores	Leader Score	MLQ Scale	% Deviation
Transformational	Idealized Attributes or Idealized Influences (Attributes)	3.000	3.250	4.00	7.6% (Leader Higher)
Transformational	Idealized Behaviors or Idealized Influences (Behaviors)	2.125	3.000	4.00	29.17% (Leader Higher)
Transformational	Inspirational Motivation	3.250	3.500	4.00	7.14% (Leader Higher)
Transformational	Intellectual Stimulation	2.250	2.500	4.00	10.00% (Leader Higher)
Transformational	Individual Consideration	2.125	3.250	4.00	34.62% (Leader Higher)
Transactional	Contingent Reward	2.000	2.500	4.00	20.00% (Leader Higher)
Transactional	Mgmt by Exception (Active)	2.250	1.750	4.00	28.57% (Leader Lower)
Outcomes	Extra Effort	2.500	3.333	4.00	25.00% (Leader Higher)
Outcomes	Effectiveness	3.286	3.500	4.00	6.12% (Leader Higher)
Outcomes	Satisfaction	3.250	4.000	4.00	18.75% (Leader

					Higher)

Manufacturer # 2

Production began in 2001 after the owner saw a need in this industry having had previous experience since 1979. The organization provides precision milling, drilling, welding, and fabrication. In 2012, the company achieved ISO 9001-2008 Quality Control and was featured in *Manufacturing News* ™. The organization currently employs seven to nine full-time machinists.

This organization was the middle sized small company in relation to the organizations that were studied. The organization focuses on high-tech machining of all types of alloy steels, which requires skilled machinists to operate the organizations machines. The environment within the organization is similar to a high-tech racecar garage. The floors are all glossy epoxy and clean. All of the tools are neatly organized and accounted for. Each of the team members have company issued uniforms that have their name and company logo on each shirt. The leader provided the perception of more of a hands-off leadership style and allowed for the team to make decisions about the daily requirements to achieve the production goals. Table 11 presents the MLQ scores that the employees and the leader answered from manufacturer # 2.

Table 11 MLQ scores of Manufacturer # 2

Manufacturer # 2					
Characteristic	Scale Name	Subordinate Scores	Leader Score	MLQ Scale	% Deviation
Transformational	Idealized Attributes or Idealized Influences (Attributes)	2.000	2.000	4.00	0.0% (Same)
Transformational	Idealized Behaviors or Idealized Influences (Behaviors)	1.906	3.250	4.00	41.35% (Leader Higher)
Transformational	Inspirational Motivation	1.844	2.750	4.00	32.95% (Leader Higher)
Transformational	Intellectual Stimulation	2.000	2.250	4.00	11.11% (Leader Higher)
Transformational	Individual Consideration	1.563	3.250	4.00	51.92% (Leader Higher)
Transactional	Contingent Reward	2.063	3.500	4.00	41.07% (Leader Higher)
Transactional	Mgmt by Exception (Active)	2.267	1.250	4.00	81.33% (Leader Lower)
Outcomes	Extra Effort	2.125	2.333	4.00	8.93% (Leader Higher)
Outcomes	Effectiveness	2.133	3.250	4.00	34.36% (Leader Higher)
Outcomes	Satisfaction	2.188	3.000	4.00	27.08% (Leader Higher)

Manufacturer # 3

Fabrication and production started in 1975 and has since successfully progressed into a second-generation company in 1990. The company provides state-of-the-art steel laser cutting, machining, welding, and fabrication. Manufacturer # 3 presently employs

approximately 22 total employees including both the manufacturing and the administrative personnel.

This organization was the largest organization that participated in this study. The manufacturing environment was more in line with a foundry or stamping company. The concrete floors were clean but not epoxied. The environment was the most industrial of the three organizations studied. There was the smell of welded steel along with a hazy cloud of dust and smoke. All of the employees were quickly moving from one location to another getting each task accomplished that was required. It resembled a human version of an ant colony. The leader came and went from his office, helping his team on the latest product that was required to be shipped. He embodied the personality of a captain of a ship or the quarterback of a football team. Table 12 represents the MLQ scores that the employees and the leader answered from manufacturer # 3.

Table 12 MLQ scores of Manufacturer # 3

Manufacturer # 3					
Characteristic	Scale Name	Subordinate Scores	Leader Score	MLQ Scale	% Deviation
Transformational	Idealized Attributes or Idealized Influences (Attributes)	2.778	2.500	4.00	11.11% (Leader Lower)
Transformational	Idealized Behaviors or Idealized Influences (Behaviors)	2.424	2.500	4.00	3.03% (Leader Higher)
Transformational	Inspirational Motivation	2.500	3.250	4.00	23.08% (Leader Higher)
Transformational	Intellectual Stimulation	2.333	3.000	4.00	22.22% (Leader Higher)
Transformational	Individual Consideration	2.486	3.750	4.00	33.71% (Leader Higher)
Transactional	Contingent Reward	2.500	4.000	4.00	37.50% (Leader Higher)
Transactional	Mgmt by Exception (Active)	2.361	2.250	4.00	4.94% (Leader Lower)
Outcomes	Extra Effort	2.481	2.667	4.00	6.94% (Leader Higher)
Outcomes	Effectiveness	3.028	3.750	4.00	19.26% (Leader Higher)
Outcomes	Satisfaction	3.500	3.500	4.00	0.00% (Same)

V.3.2 Summary of MLQ Scores and Profile

The first manufacturer leader scored higher self-ratings on each characteristic other than *management by exception*, which was the same outcome of manufacturer leader #2. However, in the case of manufacturer # 3, the leader scored lower in *management by exception* as well as lower in the transformational characteristic in

idealized attributes. Overall, each of the leaders that participated in this research self-rated themselves as being more transformational than their subordinates substantiated.

V.3.3 Pearson Correlation & Fixed Effect Regressions

A Pearson correlation was conducted to determine the bivariate relationship between transformational leadership scores and transactional leadership scores for the employee sample. This analysis was conducted to assess the strength and direction of the relationship between transformational leadership scores and transactional leadership scores. The correlation coefficient was significant ($r = .66$, $p = .005$), indicating that transformational leadership scores were positively related to transactional leadership scores.

Next, three fixed effect regressions were conducted to supplement the results of the multiple linear regressions that will be shown in detail later in this chapter. These fixed effect regressions are reported to demonstrate the relationships between transformational and transactional leadership scores and extra effort, effectiveness, and satisfaction, while controlling for company. In this analysis, the independent variables were transactional and transformational leadership scores from the employee self-reports. Additionally, company was included as a fixed effect in these regressions. Company was entered as a dummy-coded variable with Company 1 serving as the reference group. The dependent variables were employee extra effort, effectiveness, and satisfaction from the employee self-reports. A separate regression was conducted for each dependent variable.

The results for the fixed effect regression model predicting extra effort were significant ($F(4, 11) = 7.45$, $p = .004$, $R^2 = .73$, $n = 16$), indicating that the set of independent variables (i.e., the aggregate scores for transformational and transactional

leadership) significantly predicted extra effort. The R^2 value indicates that the independent variables accounted for 73% of the variability in extra effort. Transformational leadership was significantly positively related to extra effort (B = 1.98, t = 5.02, p < .001), meaning that as transformational leadership scores increased, extra effort also tended to increase. Transactional leadership was significantly negatively related to extra effort (B = -0.86, t = -2.23, p = .048), meaning that as transactional leadership scores increased, extra effort tended to decrease. Table 13 displays the results of the regression predicting extra effort.

Table 13 Fixed Effect Regression Predicting Extra Effort

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Company 2*	1.10	0.59	0.56	1.86	.090
Company 3*	0.30	0.49	0.16	0.60	.559
Transformational	1.98	0.40	1.35	5.02	< .001
Transactional	-0.86	0.39	-0.49	-2.23	.048

Note. $F(4, 11) = 7.45$, $p = .004$, $R^2 = .73$. *Company 1 is the reference group.

The results for the fixed effect regression model predicting effectiveness were significant ($F(4, 9) = 7.86$, $p = .005$, $R^2 = .78$, $n = 14$), indicating that the set of independent variables (i.e., the aggregate scores for transformational and transactional leadership) significantly predicted effectiveness. The R^2 value indicates that the independent variables accounted for 78% of the variability in effectiveness. Transformational leadership was significantly positively related to effectiveness (B = 1.37, t = 3.51, p = .007), meaning that as transformational leadership scores increased, effectiveness also tended to increase. Transactional leadership was not significantly related to effectiveness (B = -0.44, t = -1.23, p = .251), meaning that as transactional

leadership scores increased, effectiveness did not increase or decrease. Table 14 displays the results of the regression predicting effectiveness.

Table 14 Fixed Effect Regression Predicting Effectiveness

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Company 2*	0.00	0.73	0.00	-0.01	.996
Company 3*	0.33	0.59	0.18	0.55	.594
Transformational	1.37	0.39	0.95	3.51	.007
Transactional	-0.44	0.36	-0.27	-1.23	.251

Note. $F(4, 9) = 7.86$, $p = .005$, $R^2 = .78$. *Company 1 is the reference group.

The results for the fixed effect regression model predicting satisfaction were significant ($F(4, 11) = 5.42$, $p = .012$, $R^2 = .66$, $n = 16$), indicating that the set of independent variables (i.e., the aggregate scores for transformational and transactional leadership) significantly predicted satisfaction. The R^2 value indicates that the independent variables accounted for 66% of the variability in satisfaction. Transformational leadership was not significantly related to satisfaction ($B = 1.01$, $t = 2.18$, $p = .052$), meaning that as transformational leadership scores increased, satisfaction did not increase or decrease. Transactional leadership was not significantly related to satisfaction ($B = -0.33$, $t = -0.72$, $p = .487$), meaning that as transactional leadership scores increased, satisfaction did not increase or decrease. Table 15 displays the results of the regression predicting satisfaction.

Table 15 Fixed Effect Regression Predicting Satisfaction

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Company 2*	-0.36	0.69	-0.18	-0.52	.613
Company 3*	0.41	0.58	0.20	0.71	.494
Transformational	1.01	0.46	0.65	2.18	.052
Transactional	-0.33	0.45	-0.18	-0.72	.487

Note. $F(4, 11) = 5.42$, $p = .012$, $R^2 = .66$. *Company 1 is the reference group.

V.3.4 Multiple Linear Regressions

Three multiple linear regressions were estimated. Multiple linear regressions are an appropriate statistical analysis when the goal of the research is to assess the relationship between a continuous dependent variable (outcome) and multiple independent variables (predictors). Specifically, these multiple linear regressions were conducted to demonstrate the relationships between transformational and transactional leadership scores and extra effort, effectiveness, and satisfaction, regardless of company. In this analysis, the independent variables were transactional and transformational leadership scores. The dependent variables were employee extra effort, effectiveness, and satisfaction. A separate regression was conducted for each dependent variable. The standard method of multiple linear regressions was used, meaning that all independent variables were entered into the model at the same time.

The assumptions of multiple linear regressions were tested. These assumptions include normality, homoscedasticity, and absence of multicollinearity. The assumption of normality was tested by examination of a normal P-P plot. The assumption of homoscedasticity was tested by examination of a scatterplot. Finally, multicollinearity was tested using Variance Inflation Factors (VIF). Stevens (2009) suggests that VIF values greater than 10 indicate the presence of multicollinearity.

In this analysis, the independent variables were transactional and transformational leadership scores from the employee self-reports. The dependent variables were employee extra effort, effectiveness, and satisfaction from the employee self-reports. A separate regression was conducted for each dependent variable. The standard method of multiple linear regressions was used, meaning that all independent variables were entered

into the model at the same time. Each regression may be represented by the following equation:

$$y = x_0 + x_1B_1 + x_2B_2$$

In the above equation, y represents the dependent variable (i.e., extra effort, effectiveness, or satisfaction), x_0 represents the y-intercept, x_1 represents transformational leadership score, B_1 represents the *B* coefficient for transformational leadership score, x_2 represents transactional leadership score, and B_2 represents the *B* coefficient for transactional leadership score.

Prior to conducting the multiple linear regressions for extra effort, the assumptions of normality, homoscedasticity, and absence of multicollinearity were tested. The assumption of normality was tested by examination of a normal P-P plot (see Figure 9). The data did not strongly deviate from the normal line, so this assumption was met. The assumption of homoscedasticity was tested by examination of a scatterplot (see Figure 10). The data were equally distributed around zero, so this assumption was met. Finally, multicollinearity was tested using Variance Inflation Factors (VIF). Stevens (2009) suggests that VIF values greater than 10 indicate the presence of multicollinearity. All VIF values were below 10, so this assumption was met.

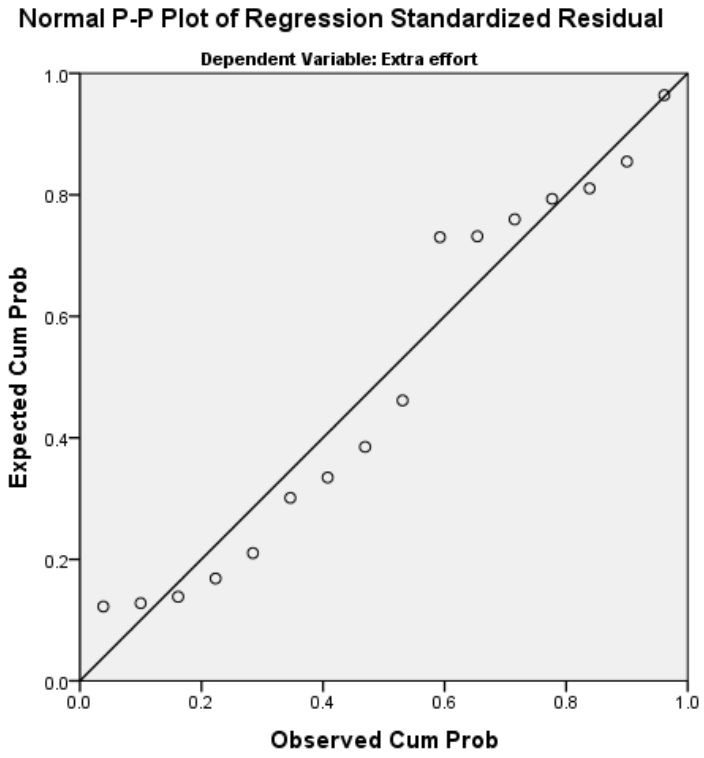

Figure 9 Normal P-P Plot for Extra Effort

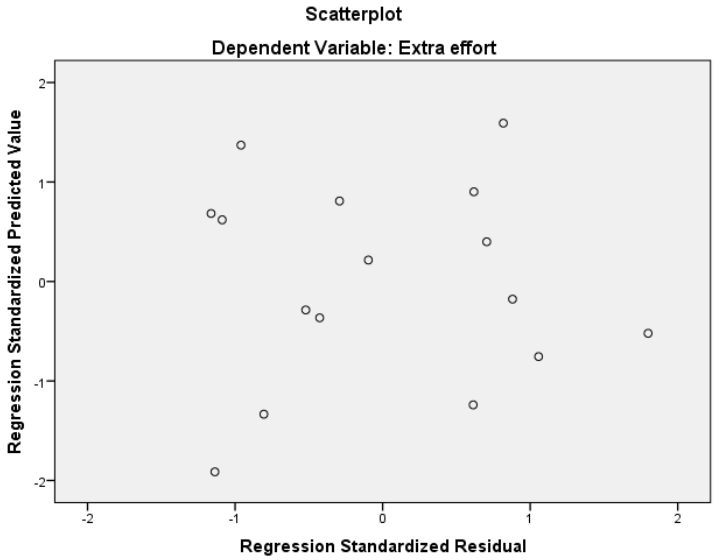

Figure 10 Scatterplot for Extra Effort

The results for the regression model predicting extra effort were significant ($F(2, 13) = 10.60$, $p = .002$, $R^2 = .62$, $n = 16$), indicating that the set of independent variables (i.e., the aggregate scores for transformational and transactional leadership) significantly predicted extra effort. The R^2 value indicates that transformational and transactional leadership scores accounted for 62% of the variability in extra effort. Transformational leadership was significantly positively related to extra effort ($B = 1.46$, $t = 4.34$, $p = .001$), meaning that as transformational leadership scores increased, extra effort also tended to increase. Transactional leadership was not significantly related to extra effort ($B = -0.68$, $t = -1.71$, $p = .112$), meaning that as transactional leadership scores increased, extra effort did not increase or decrease. Table 16 displays the results of the regression predicting extra effort.

Table 16 Multiple Linear Regression Predicting Extra Effort

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Transformational	1.46	0.34	0.99	4.34	.001
Transactional	-0.68	0.40	-0.39	-1.71	.112

Note. $F(2, 13) = 10.60$, $p = .002$, $R^2 = .62$.

Prior to conducting the multiple linear regressions for effectiveness, the assumptions of normality, homoscedasticity, and absence of multicollinearity were tested. The assumption of normality was tested by examination of a normal P-P plot (see Figure 11). The data did not strongly deviate from the normal line, so this assumption was met. The assumption of homoscedasticity was tested by examination of a scatterplot (see Figure 12). The data were equally distributed around zero, so this assumption was met. Finally, multicollinearity was tested using VIF values. All VIF values were below 10, so this assumption was met.

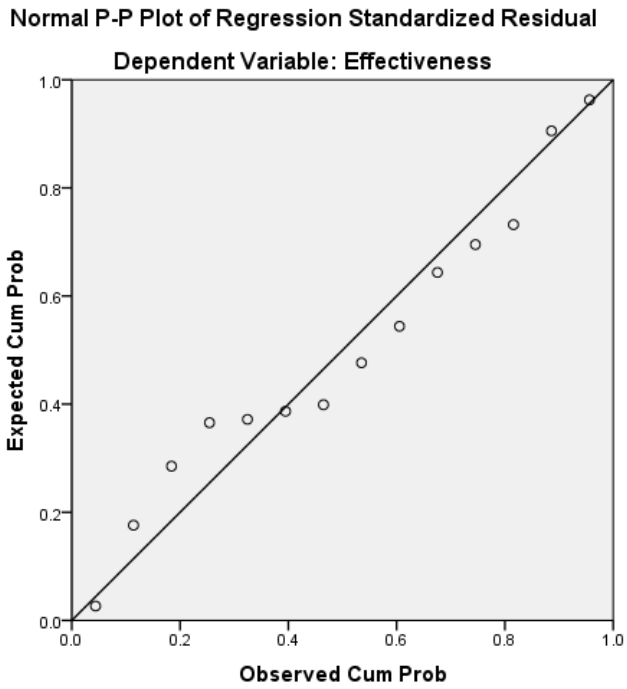

Figure 11 Normal P-P Plot for Effectiveness

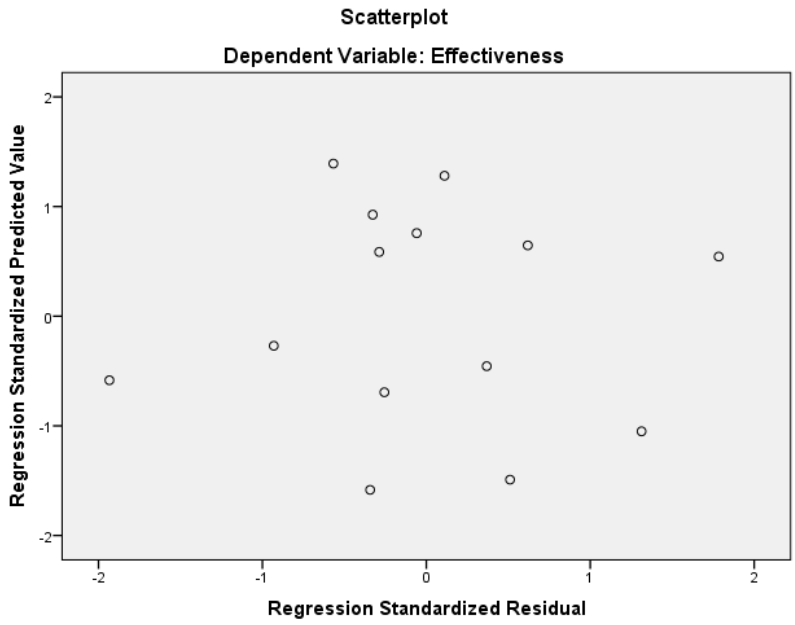

Figure 12 Scatterplot for Effectiveness

The results for the regression model predicting effectiveness were significant ($F(2, 11) = 16.45$, $p < .001$, $R^2 = .75$, $n = 14$), indicating that the set of independent

variables (i.e., the aggregate scores for transformational and transactional leadership) significantly predicted effectiveness. The R^2 value indicates that transformational and transactional leadership scores accounted for 75% of the variability in effectiveness. Transformational leadership was significantly positively related to effectiveness (B = 1.48, t = 4.90, p < .001), meaning that as transformational leadership scores increased, effectiveness also tended to increase. Transactional leadership was not significantly related to effectiveness (B = -0.43, t = -1.26, p = .235), meaning that as transactional leadership scores increased, effectiveness did not increase or decrease. Table 17 displays the results of the regression predicting effectiveness.

Table 17 Multiple Linear Regression Predicting Effectiveness

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Transformational	1.48	0.30	1.03	4.90	< .001
Transactional	-0.43	0.34	-0.26	-1.26	.235

Note. $F(2, 11) = 16.45$, $p < .001$, $R^2 = .75$.

Prior to conducting the multiple linear regressions for satisfaction, the assumptions of normality, homoscedasticity, and absence of multicollinearity were tested. The assumption of normality was tested by examination of a normal P-P plot (see Figure 13). The data did not strongly deviate from the normal line, so this assumption was met. The assumption of homoscedasticity was tested by examination of a scatterplot (see Figure 14). The data were equally distributed around zero, so this assumption was met. Finally, multicollinearity was tested using VIF values. All VIF values were below 10, so this assumption was met.

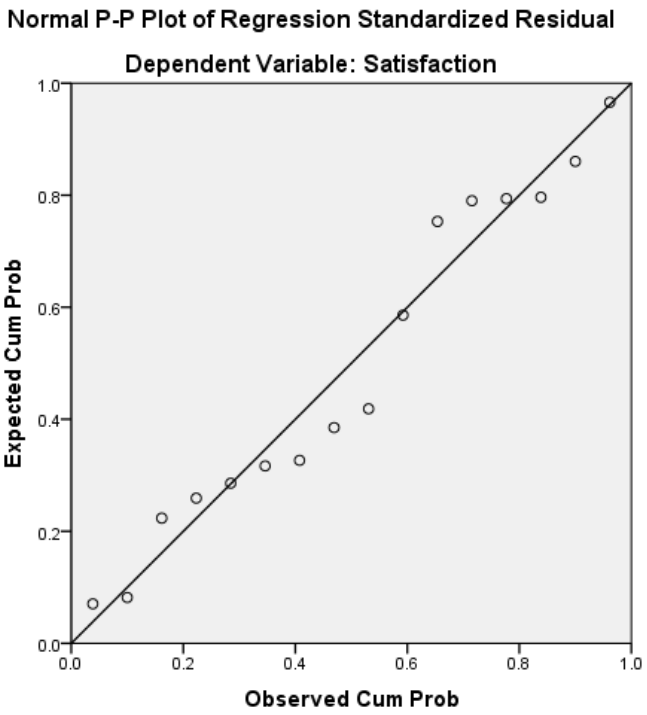

Figure 13 Normal P-P Plot for Satisfaction

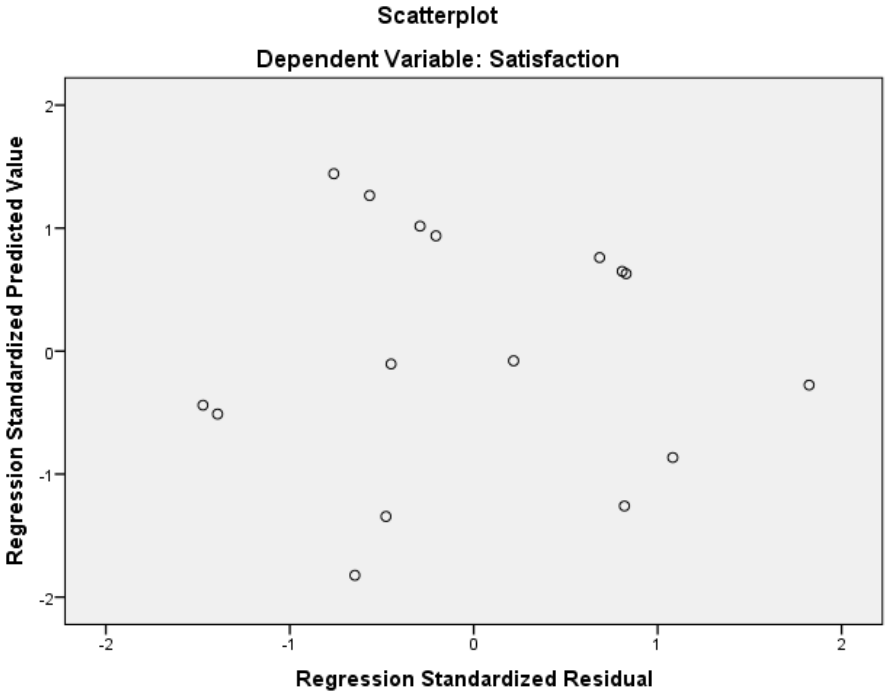

Figure 14 Scatterplot for Satisfaction

The results for the regression model predicting satisfaction were significant ($F(2, 13) = 9.07$, $p = .003$, $R^2 = .58$, $n = 16$), indicating that the set of independent variables (i.e., the aggregate scores for transformational and transactional leadership) significantly predicted satisfaction. The R^2 value indicates that transformational and transactional leadership scores accounted for 58% of the variability in satisfaction. Transformational leadership was significantly positively related to satisfaction ($B = 1.35$, $t = 3.64$, $p = .003$), meaning that as transformational leadership scores increased, satisfaction also tended to increase. Transactional leadership was not significantly related to satisfaction ($B = -0.33$, $t = -0.75$, $p = .464$), meaning that as transactional leadership scores increased, satisfaction did not increase or decrease. Table 18 displays the results of the regression predicting satisfaction.

Table 18 Multiple Linear Regression Predicting Satisfaction

Independent Variable	*B*	Std. Error	Beta	*t*	Sig.
Transformational	1.35	0.37	0.87	3.64	.003
Transactional	-0.33	0.44	-0.18	-0.75	.464

Note. $F(2, 13) = 9.07$, $p = .003$, $R^2 = .58$.

V.3.5 Descriptive Statistics & Normative U. S. Sample

The final section of this chapter will focus on the descriptive statistics from the study and be compared to the U.S. normative samples provided by Mind Garden.

In order to compare the scores observed in the present sample to the norms reported by Mind Garden, one sample *t*-tests were conducted. Leaders' scores were compared to the U.S. normative self-scores, and employees' scores were compared to the U.S. normative lower-scores. The results of the one-sample *t*-tests are presented in Table 19. There were no significant differences between the scores observed in the present

sample and the normative leader self-scores (all *p*-values > .05). However, there were significant differences between the employees' scores in the present sample compared to the normative lower-scores. Specifically, the present sample had significantly lower scores than normal on idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, individual consideration, and contingent reward. The present sample had significantly higher scores than normal on management by exception active. This would suggest that the present sample still believes that they are led within more of a transactional leadership environment, however, this study additionally confirmed that the employees' extra effort, effectiveness, and satisfaction would increase with more of a transformational leadership environment.

Table 19 One Sample T-tests Comparing Sample Means to Normative Means

Variable	Leader			Employee		
	Sample *M*	Normative (Self) *M*	Sig.	Sample *M*	Normative (Lower) *M*	Sig.
Transformational						
Idealized attributes	2.58	2.95	.419	2.47	2.93	.026
Idealized behaviors	2.92	2.99	.771	2.21	2.73	.003
Inspirational motivation	3.17	3.04	.624	2.29	2.97	.010
Intellectual stimulation	2.58	2.96	.230	2.13	2.76	<.001
Individual consideration	3.42	3.16	.263	2.07	2.78	.001
Transactional						
Contingent reward	3.33	2.99	.518	2.24	2.84	.003
Management by exception active	1.75	1.58	.616	2.26	1.67	.002
Effectiveness	3.50	3.14	.130	2.70	3.09	.091
Satisfaction	3.50	3.09	.291	2.92	3.09	.454
Extra effort	2.78	2.79	.971	2.33	2.78	.052

This chapter presented the results of the data analysis that were conducted to determine if transformational or transactional leadership is more beneficial within small U.S. industrial machining and fabricating companies to achieve the outcomes of extra effort, effectiveness, and satisfaction. The results of the multiple linear regression analysis showed that transformational leadership was significantly positively related to extra effort, effectiveness, and satisfaction. Transactional leadership was not significantly related to extra effort, effectiveness, or satisfaction. Given this information on each of the statistical analysis coupled with the previous studies (Avolio, 1999; Avolio & Yammarino, 2002; Bass, 1998) it is evident that having more of a transformational leadership would generate an increase in Extra Effort, Effectiveness, and Satisfaction which is what this dissertation strived to research. The next chapter will contain discussion of these findings; contributions, research limitations, potential future research, and recommendations for practitioners will be reviewed.

VI CHAPTER 6: DISCUSSION OF FINDINGS, CONTRIBUTIONS, LIMITATIONS & FUTURE RESEARCH

VI.1 Discussion of Findings

Taking into account the realization that an industrial working environment still tends to be considered more of a physical transactional dominated environment but evolving due to increasing educational levels, the findings were surprising in the sense that the subordinates agreed that they would exhibit more of the performance outcomes if the leader utilized more of a transformational leadership style.

In terms of the results, each of the analysis used provided meaningful information for the final conclusion that an increase in the performance outcomes would become present with a transformational leadership style.

Overwhelmingly, the leaders consistently self-rated to be more transformational compared to the results of the subordinates. This would not be considered a total phenomena given that people would naturally gravitate in wanting to see themselves as being more transformational compared to being a transactional leader. However, when the t-test was conducted it was shown that the leaders in the study were actually in-line with the normative U.S. example, whereas, the employees in this study significantly scored lower than the U.S. normative sample. This would suggest that even though the research of this study was successful in concluding that a transformational leader would promote an increase in Extra Effort, Effectiveness, and Satisfaction, that the participants

Confirmation was also showcased with both the fixed effect regressions as well as multiple linear regressions. Both set of results substantiated that with test cases researched that the performance outcomes of extra effort, effectiveness, and satisfaction would be present given a more transformational leadership style.

VI.2 Contributions

This dissertation provides considerable contributions. In the spring of 2001 Dr. Jule D. Scarborough wrote an article titled *Transforming Leadership in the Manufacturing Industry* for the Journal of Industrial Technology. Within the article Dr. Scarborough stated, "The United States has a need for dedicated industrial leaders motivated to confront the challenges posed by the complex and turbulent arena in which corporations compete. The critical issues confronting the contemporary company are in marked contrast to the challenges of the 1970s and '80s." To this end, this dissertation set out to investigate on whether transformational or transactional leadership styles in an industrial manufacturing environment would benefit the organization.

This research contributed to that engaged-scholarship. As more industrial companies focus on the benefits of transformational leadership compared to transactional leadership, the outcomes that this dissertation focused will be positively related (Selzer & Bass 1990). Additionally, previous academic journals focused on transformational and transactional leadership within multiple industries (Lowe et. al. 1996), whereas this dissertation strictly investigated these leadership styles within the context of an industrial manufacturing environment.

VI.3 Limitations & Future Research

This research was performed with three participating small industrial machining and fabricating companies and, while the results would be thought to be representative of other industrial companies, the results should be substantiated with additional industrial companies. Each of the companies is categorized as small industrial corporations, all located in the southeast of the United States. Future research would benefit to include

companies that would be classified as large organizations as well as geographically diverse throughout the United States.

All of the participating companies were privately owned so future research would be advantageous to see if an industrial company that is publicly owned and required to produce quarterly earnings reports would validate the findings in this study. Additionally, a qualitative research that would build upon this dissertation where the leaders and subordinates would be interviewed to provide a more in-depth perspective related to the MLQ results would be recommended for future research. This study was limited within that scope; however, the foundational information provided by this dissertation will be a good start to continue to investigate the leadership styles within alternative industrial organizations.

VII CHAPTER 7: PERSONAL REFLECTION OF 20 YEARS

Leadership has evolved over the past 20 years within the confines of an industrial environment, but this is no great surprise. Change happens over the course of twenty years regardless if you are dealing with trains, planes, or automobiles. Progression is ever marching on. But the overall environment within the industrial sector has seen great changes from years gone by. The skill sets have been required to evolve. Years ago a machinist was an artisan with his hands being able to put the perfect arc in a 1956 Chevrolet Bel Air's fender and do it hundreds of times in a row. Now machinists are experts in computer coding, mathematics, and engineering. In some cases these machinist of today have been trained to the same level of hours and commitment than a lawyer, nurse, or doctor. Within this new normal, transformational leadership is a must to promote and achieve performance outcomes of employee extra effort, effectiveness, and satisfaction.

VII.1 Organization Transformation

So how does an organization strive to create a culture of transformational leadership? It must initiate from the top! Every corporate culture is a direct reflection of how the leader has led, both for the good or the bad. Set the bar high from the start and it will be easier as the company grows. Perform a companywide code of ethics review and create a short list of the core values that the organization stands by and truly strives to follow. The following chart would be a good sample for an organization.

Core Values
Honesty
Integrity
Quality
Servant Leadership
Safety

While the organization is performing the code of ethics review, simultaneously begin to create an Organizational Mission Statement that the company stands behind 100% of the time. The following is a good example of a mission statement that was created by an industrial machining company.

Organizational Mission Statement:

Our customers and final users of our products are our first responsibility.
While exceeding expectations, we supply products of the highest quality.
We execute more and limit waste of time and materials.
We are accountable with a sense of urgency, having the highest of ethical standards.
These standards give us our competitive advantage.
We believe that high ethics and moral character are more valuable than titles and prestige.
Integrity is the core of who we are.
Competitors are viewed as opponents, not as enemies.
Suppliers are viewed as colleagues, not as commodities.
Our ultimate goal is to partner with each of our customers to ensure a smooth and effortless business relationship.
We continuously strive to reduce our fixed and market-driven costs to maintain the most competitive prices.
With this partnership we will create a constant, committed environment for customers and colleagues alike.
Crises are opportunities, not threats. We will engage those opportunities.

VII.2 Leadership Transformation

Throughout the years many individuals have become giants in the field of leadership including Jack Welsh, Richard Daft, John Maxwell, Kenneth Blanchard, Robert Greenleaf and scores of other well deserving people that have propelled corporate leaders with the tools to promote a transformational style of leading. One additional individual that would be wisdom to emulate would be the teaching and life lessons of Jim Rohm. His wisdom is illustrated in Table 20 where he showcases 7 personality traits to help anyone become a great leader.

Table 20 "Qualities of Skillful Leadership"

Learn to be strong but not impolite	It is an extra step you must take to become a powerful, capable leader with a wide range of reach. Some people mistake rudeness for strength. It's not even a good substitute.
Learn to be kind but not weak	We must not mistake weakness for kindness. Kindness isn't weak. Kindness is a certain type of strength. We must be kind enough to tell someone the truth. We must be kind enough and considerate enough to lay it on the line. We must be kind enough to tell it like it is and not deal in delusion.
Learn to be bold but not a bully	In takes boldness to win the day. To build your influence, you've got to walk in front of your group. You've got to be willing
You've got to learn to be humble, but not timid	You can't get to the high life by being timid. Some people mistake timidity for humility. Humility is almost a God-like word. A sense of awe. A sense of wonder. An awareness of the human soul and spirit. An understanding that there is something unique about the human drama versus the rest of life. Humility is a grasp of the distance between the stars, and us yet having the feeling that we're part of the

	stars. Therefore, humility is a virtue; but timidity is a disease. Timidity is an affliction. It can be cured, but it is a problem.
Be proud but not arrogant	It takes pride to win the day. It takes pride to build your ambition. It takes pride in community. It takes pride in cause, in accomplishment. But the key to becoming a good leader is being proud without being arrogant. In fact I believe the worst kind of arrogance is arrogance from ignorance. It's when you don't know that you don't know. Now that kind of arrogance is intolerable. If someone is smart and arrogant, we can tolerate that. But if someone is ignorant and arrogant, that's just too much to take.
Develop humor without folly	That's important for a leader. In leadership, we learn that it's okay to be witty, but not silly. It's okay to be fun, but not foolish.
Lastly, deal in realities. Deal in truth	Save yourself the agony. Just accept life like it is. Life is unique. Some people call it tragic, but I'd like to think it's unique. The whole drama of life is unique. It's fascinating. And I've found that the skills that work well for one leader may not work at all for another. But the fundamental skills of leadership can be adapted to work well for just about everyone: at work, in the community, and at home.

Adapted from "Qualities of Skillful Leadership" by Jim Rohn

VII.3 Closing Thoughts and Recommendations for Practitioners

Leadership is the understanding and conviction of the path that the leader has chosen, while being able to share the passion to subordinates that willingly chooses to follow the leader. Leaders can lead from behind with a hanging carrot or a stick which we now know would be transactional leadership or the leader can lead from the front by encouraging, uplifting, and supporting the individual to follow. This we now know has transformational leadership.

For industrial manufacturing leaders this dissertation hopefully provided the results necessary for these leaders to begin focusing on more of a transformational leadership style. Given that this style shows beneficial outcomes of employee extra effort, effectiveness, and satisfaction, companies would be wise to promote this leadership style to remain competitive in the manufacturing sector.

As time continues to pass and technological achievements surpass current understanding, the leaders of tomorrow will be required to perform leadership to overcome the pending global competition and challenges that lie ahead. With transformational leadership the manufacturing sector in the United States will be able to meet those challenges and competition. The findings of this dissertation will be best suited if future research continues to build on the foundation of transformational leadership and how it affects the individual both the leader and the subordinate.

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APPENDIX

Multifactor Leadership Questionnaire Samples

Multifactor Leadership Questionnaire

Leader Form

My Name: _____ Date: _____

Organization ID #: _____ Leader ID #: _____

This questionnaire is to describe your leadership style as you perceive it. Please answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.**

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits you. The word "others" may mean your peers, clients, direct reports, supervisors, and/or all of these individuals.

Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

1.	I provide others with assistance in exchange for their efforts	0	1	2	3	4
2.	I re-examine critical assumptions to question whether they are appropriate	0	1	2	3	4
3.	I fail to interfere until problems become serious	0	1	2	3	4
4.	I focus attention on irregularities, mistakes, exceptions, and deviations from standards	0	1	2	3	4
5.	I avoid getting involved when important issues arise	0	1	2	3	4
6.	I talk about my most important values and beliefs	0	1	2	3	4
7.	I am absent when needed	0	1	2	3	4
8.	I seek differing perspectives when solving problems	0	1	2	3	4
9.	I talk optimistically about the future	0	1	2	3	4
10.	I instill pride in others for being associated with me	0	1	2	3	4
11.	I discuss in specific terms who is responsible for achieving performance targets	0	1	2	3	4
12.	I wait for things to go wrong before taking action	0	1	2	3	4
13.	I talk enthusiastically about what needs to be accomplished	0	1	2	3	4
14.	I specify the importance of having a strong sense of purpose	0	1	2	3	4
15.	I spend time teaching and coaching	0	1	2	3	4

Continued ➔

Not at all	Once in a while	Sometimes	Fairly often	Frequently, If not always
0	1	2	3	4

16. I make clear what one can expect to receive when performance goals are achieved	0	1	2	3	4
17. I show that I am a firm believer in "If it ain't broke, don't fix it."	0	1	2	3	4
18. I go beyond self-interest for the good of the group	0	1	2	3	4
19. I treat others as individuals rather than just as a member of a group	0	1	2	3	4
20. I demonstrate that problems must become chronic before I take action	0	1	2	3	4
21. I act in ways that build others' respect for me	0	1	2	3	4
22. I concentrate my full attention on dealing with mistakes, complaints, and failures	0	1	2	3	4
23. I consider the moral and ethical consequences of decisions	0	1	2	3	4
24. I keep track of all mistakes	0	1	2	3	4
25. I display a sense of power and confidence	0	1	2	3	4
26. I articulate a compelling vision of the future	0	1	2	3	4
27. I direct my attention toward failures to meet standards	0	1	2	3	4
28. I avoid making decisions	0	1	2	3	4
29. I consider an individual as having different needs, abilities, and aspirations from others	0	1	2	3	4
30. I get others to look at problems from many different angles	0	1	2	3	4
31. I help others to develop their strengths	0	1	2	3	4
32. I suggest new ways of looking at how to complete assignments	0	1	2	3	4
33. I delay responding to urgent questions	0	1	2	3	4
34. I emphasize the importance of having a collective sense of mission	0	1	2	3	4
35. I express satisfaction when others meet expectations	0	1	2	3	4
36. I express confidence that goals will be achieved	0	1	2	3	4
37. I am effective in meeting others' job-related needs	0	1	2	3	4
38. I use methods of leadership that are satisfying	0	1	2	3	4
39. I get others to do more than they expected to do	0	1	2	3	4
40. I am effective in representing others to higher authority	0	1	2	3	4
41. I work with others in a satisfactory way	0	1	2	3	4
42. I heighten others' desire to succeed	0	1	2	3	4
43. I am effective in meeting organizational requirements	0	1	2	3	4
44. I increase others' willingness to try harder	0	1	2	3	4
45. I lead a group that is effective	0	1	2	3	4

Multifactor Leadership Questionnaire
Rater Form

Name of Leader: _____ Date: _____

Organization ID #: _____ Leader ID #: _____

This questionnaire is used to describe the leadership style of the above-mentioned individual as you perceive it. Answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.** Please answer this questionnaire anonymously.

Important (necessary for processing): Which best describes you?

___ I am at a higher organizational level than the person I am rating.
___ The person I am rating is at my organizational level.
___ I am at a lower organizational level than the person I am rating.
___ Other than the above.

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits the person you are describing. Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

The Person I Am Rating. . .

1.	Provides me with assistance in exchange for my efforts	0	1	2	3	4
2.	*Re-examines critical assumptions to question whether they are appropriate	0	1	2	3	4
3.	Fails to interfere until problems become serious	0	1	2	3	4
4.	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards	0	1	2	3	4
5.	Avoids getting involved when important issues arise	0	1	2	3	4
6.	*Talks about his/her most important values and beliefs	0	1	2	3	4
7.	Is absent when needed	0	1	2	3	4
8.	*Seeks differing perspectives when solving problems	0	1	2	3	4
9.	*Talks optimistically about the future	0	1	2	3	4
10.	*Instills pride in me for being associated with him/her	0	1	2	3	4
11.	Discusses in specific terms who is responsible for achieving performance targets	0	1	2	3	4
12.	Waits for things to go wrong before taking action	0	1	2	3	4
13.	*Talks enthusiastically about what needs to be accomplished	0	1	2	3	4
14.	*Specifies the importance of having a strong sense of purpose	0	1	2	3	4
15.	*Spends time teaching and coaching	0	1	2	3	4

Continued ➔

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

16.	Makes clear what one can expect to receive when performance goals are achieved	0	1	2	3	4
17.	Shows that he/she is a firm believer in "If it ain't broke, don't fix it."	0	1	2	3	4
18.	*Goes beyond self-interest for the good of the group	0	1	2	3	4
19.	*Treats me as an individual rather than just as a member of a group	0	1	2	3	4
20.	Demonstrates that problems must become chronic before taking action	0	1	2	3	4
21.	*Acts in ways that builds my respect	0	1	2	3	4
22.	Concentrates his/her full attention on dealing with mistakes, complaints, and failures	0	1	2	3	4
23.	*Considers the moral and ethical consequences of decisions	0	1	2	3	4
24.	Keeps track of all mistakes	0	1	2	3	4
25.	*Displays a sense of power and confidence	0	1	2	3	4
26.	*Articulates a compelling vision of the future	0	1	2	3	4
27.	Directs my attention toward failures to meet standards	0	1	2	3	4
28.	Avoids making decisions	0	1	2	3	4
29.	*Considers me as having different needs, abilities, and aspirations from others	0	1	2	3	4
30.	*Gets me to look at problems from many different angles	0	1	2	3	4
31.	*Helps me to develop my strengths	0	1	2	3	4
32.	*Suggests new ways of looking at how to complete assignments	0	1	2	3	4
33.	Delays responding to urgent questions	0	1	2	3	4
34.	*Emphasizes the importance of having a collective sense of mission	0	1	2	3	4
35.	Expresses satisfaction when I meet expectations	0	1	2	3	4
36.	*Expresses confidence that goals will be achieved	0	1	2	3	4
37.	Is effective in meeting my job-related needs	0	1	2	3	4
38.	Uses methods of leadership that are satisfying	0	1	2	3	4
39.	Gets me to do more than I expected to do	0	1	2	3	4
40.	Is effective in representing me to higher authority	0	1	2	3	4
41.	Works with me in a satisfactory way	0	1	2	3	4
42.	Heightens my desire to succeed	0	1	2	3	4
43.	Is effective in meeting organizational requirements	0	1	2	3	4
44.	Increases my willingness to try harder	0	1	2	3	4
45.	Leads a group that is effective	0	1	2	3	4

Participant Consent Form - Copy

Georgia State University
Department of Executive Doctorate in Business
Informed Consent

Title: EVALUATING LEADERSHIP: A MLQ STUDY OF SMALL U.S. INDUSTRIAL MACHINING AND FABRICATING COMPANIES

Principal Investigator: Dr. Conrad S. Ciccotello (Chair)
Student Principal Investigator: Christopher W. Gabers (Student)

I. Purpose:
You are invited to participate in a research study. The purpose of the study is to investigate leadership styles within a small U.S. industrial company. You are invited to participate because you are employed by a small U.S. industrial machining and fabricating company. A total of approximately 40 participants will be recruited for this study. Participation will require 20 minutes of your time.

II. Procedures:
If you decide to participate, you will be asked to fill out a 45 question leadership questionnaire that will take 20 minutes of your time.
Sample questions will be similar to:
The person I am rating is absent when needed, avoids getting involved when important issues arise, and fails to interfere until problems become serious.

III. Risks:
In this study, you will not have any more risks than you would in a normal day of life.

IV. Benefits:
Participation in this study may not benefit you personally. Overall, we hope to gain information about leadership styles in small U.S. industrial machining and fabricating companies.

V. Voluntary Participation and Withdrawal:
Participation in research is voluntary. You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time.

VI. Confidentiality:
No personal identifiable information (name, address, age, phone) will be obtained from this questionnaire. Once research process is complete all questionnaires will be destroyed.

VIII. Contact Persons:

If you have any questions about this study, you may contact Chris Gabers at phone number 615-305-3524 or the advisor, Dr. Conrad S. Ciccotello, at phone number 404-413-7462.
You can also call if you think you have been harmed by the study.
Call Susan Vogtner in the Georgia State University Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu if you want to talk to someone who is not part of the study team.
You can talk about questions, concerns, offer input, obtain information, or suggestions about the study.
You can also call Susan Vogtner if you have questions or concerns about your rights in this study.

IX. Copy of Consent Form to Participant:

We will give you a copy of this consent form to keep.

If you are willing to volunteer for this research, please sign below.

_____	_____
Participant	Date
_____	_____
Principal Investigator or Researcher Obtaining Consent	Date

VITA

Christopher Gabers resides in Gallatin, TN with his wife Amanda. They have been blessed with four amazing children, Everett, Christian, Teagan, and Marasol. Christopher is a 20-year professional in the steel fabricating and machining industry, where he was responsible for business development, strategic planning, and account acquisitions. He is currently an equity partner of KG Machine LLC., a market leader in the design and manufacturer of commercial and residential steel griddle plates, focused on research and development, cost containment, and partner development and management.

Christopher graduated with a BA in Management and Human Relations and a Masters in Business Administration from Trevecca Nazarene University. He also holds an Executive Development Institute Certificate in Business Excellence from The Owen Graduate School of Management at Vanderbilt University as well as a Masters Certificate in Negotiations from Mendoza College of Business at University of Notre Dame. Chris will receive his Doctorate in Business from Georgia State University as a member of the class of 2016.