Universidade do Minho
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Linking Leadership to Project Success

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This thesis marks another big milestone in my life and a goal which I have always looked forward to achieve. I never expected to have during this incredible experience so many changes in my life. I was single working in the oil industry in the very north west of Canada, got married to whom I am passionately in love with and moved with him to Portugal, became a mother to two beautiful cupcakes and moved back to Canada.

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

ABSTRACT

It is crucial for firms to stay competitive in today's globalized and knowledge-driven society, and this can come in a variety of different forms. Knowledge and human based resources are one such route, in particular, the employment of leadership as a way to achieve success within any given market. With regards to the manufacturing industry which is increasingly dealing with Information Technology projects, that tend to have high rates of failure, leadership plays an equally important role and should not be overlooked as a useful tool. Thus, there is a need for understanding the integral role that leadership plays in projects and how it can be used to improve the chances of project success.

Sadly, research is lacking in a number of areas of interest with regards to the impact and importance of leadership within firms. Specifically, there is a lack of research on the role of leadership in Small and Medium-sized Enterprises, as well as a lack of research identifying specific factors that lead to good leadership and the impact that those factors have on project and on specific project phases. Most of the research performed to date speaks of leadership in a much broader sense.

The current research work delves into this knowledge gap, by identifying leadership factors and performing primary research on the impact that these leadership factors have on project success and, more precisely, on project phases. The main objective of the study was to identify the key leadership factors that have the largest and most direct impact on project success for Small and Medium-sized Enterprises in the manufacturing industry. Many relevant areas of interest were analyzed throughout the research and three milestones were reached to achieve the overall objective mentioned above. These three milestones were to identify the top ten leadership factors for a project manager with the direct and indirect interconnections between them, link the leadership factors to project phases by determining which factors are most important to each phase, and present the impact leadership factors have on project success, specifically understanding the culture of various project phases, and having an indication of when, during the project lifecycle, the leadership factors that are most impactful and most beneficial to be implemented to improve the success rate of projects.

KEYWORDS: Leadership, Project Management, Project Success

RESUMO

É crucial que as empresas permaneçam competitivas na sociedade globalizada e orientada pelo conhecimento de hoje, e isso pode ser alcançado de diferentes formas. Conhecimento e recursos humanos são uma dessas vias, em particular, o emprego da liderança como forma de alcançar o sucesso dentro de qualquer mercado. Com relação à indústria da manufatura, que está a lidar cada vez mais com projetos de Tecnologia da Informação, que tendem a apresentar altas taxas de fracasso, a liderança desempenha um papel igualmente importante e não deve ser negligenciada como uma ferramenta útil. Assim, há necessidade de entender o papel integral que a liderança desempenha nos projetos e como ela pode ser usada para melhorar as chances de sucesso do projeto.

Infelizmente, faltam pesquisas em várias áreas de interesse com relação ao impacto e à importância da liderança dentro das empresas. Especificamente, há uma falta de pesquisa sobre o papel da liderança em Pequenas e Médias Empresas, bem como a falta de pesquisa identificando fatores específicos que levam a uma boa liderança e o impacto que esses fatores têm no projeto e em fases específicas do projeto. A maioria da investigação realizada até à data aborda a liderança num sentido muito mais amplo.

O atual trabalho de investigação aprofunda essa lacuna de conhecimento, identificando fatores de liderança e realizando pesquisas primárias sobre o impacto que esses fatores de liderança têm no sucesso do projeto e, mais precisamente, nas fases do projeto. O principal objetivo do estudo foi identificar os principais fatores de liderança que têm o maior e mais direto impacto no sucesso dos projetos para Pequenas e Médias Empresas na indústria de manufatura. Muitas áreas relevantes de interesse foram analisadas ao longo da pesquisa e três marcos foram alcançados para atingir o objetivo geral mencionado acima. Esses três marcos foram identificar os dez principais fatores de liderança de um gestor de projeto com as interconexões diretas e indiretas entre eles, ligar os fatores de liderança às fases do projeto determinando que fatores são mais importantes para cada fase, e apresentar o impacto dos fatores de liderança no sucesso do projeto, compreendendo especificamente a cultura de várias fases do projeto, e tendo uma indicação de quando, durante o ciclo de vida do projeto, os fatores de liderança que são mais impactantes e com mais benefícios na implementação para melhorar a taxa de sucesso dos projetos.

PALAVRAS CHAVE: Liderança, Gestão de Projetos, Sucesso do Projeto

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SYMBOLS AND ACRONYMS

Symbol	Description
APM	Association of Project Management
B2B	Business to Business
BM	Benefits Management
CIT	Communications Information Technology
CMM	Capability Maturity Model
DPISE	Doctoral Program in Industrial and Systems Engineering
EQ	Emotional Quotient
EU	European Union
GDP	Gross Domestic Product
ICOPEV	International Conference on Production Economics and Project Evaluation
IPMA	International Project Management Association
PMI	Project Management Institute
PMCD	Project Management Competency Development
IQ	Intelligence Quotient
IS	Information System
IT	Information Technology
KPI	Key Performance Indicator
MNE	Multi National Enterprise
MQ	Managerial Quotient
NAICS	North American Industry Classification System
PMBOK	Project Management Body of Knowledge
PMM	Project Management Methodology
R&D	Research and Development
SEI	Software Engineering Institute
SME	Small and Medium-sized Enterprise
UK	United Kingdom

US	United States
CEs	Competency Elements
ICB	Individual Competence Baseline

1. INTRODUCTION

The following chapter presents some background information on the research project performed. To start, some general information about the manufacturing industry has been discussed, so that an understanding of the field in which the project takes place can be developed. An introduction to the project is then undertaken, discussing the issue which has presented itself in the literature. From this issue, the purpose and objectives of the study were decided upon and discussed. This is then delved into further and discussions relating to the motivation behind initiating the research, as well as the development of the research question. Finally, information pertaining to the research design and the methodologies utilised as well as the limitations presented throughout the study are discussed.

1.1 Background

In virtually every field in today's globalized society it is crucial for firms to stay competitive in the market. For many, this can mean tapping into social technologies (Kingsley et al., 2011), streamlining processes, and acquiring the most educated and talented minds for their firm. A subtler and often undervalued way to achieve success within a market is utilizing the soft-skill of leadership to organize and direct individuals within an organization to work effectively and efficiently towards an end goal (Maladzhi, Yan, & Makinde, 2012). Leadership plays a critical role in every aspect of the organization from the day-to-day businesses activities, to the variety of short- and long-term projects undertaken to improve processes and implement new and functional systems.

The challenge of constantly staying competitive in an ever-changing and increasingly globalized market is no different for the manufacturing sector. The first industrial revolution, which occurred from the mid-18th century to the mid-19th century (Spear, 2016) allowed for a boom of jobs, especially in the manufacturing sector, where an increased interconnectedness with the scientific community allowed for new inventions (Ó Gráda, 2016). Of course, an agglomeration of factors is to be held responsible for the industrial revolution, including advances in human capital, but the science-based knowledge, acquired by entrepreneurs throughout this time, was a key contributing factor (Ó Gráda, 2016). Before

this wide-scale shift, manufacturing relied heavily on manpower, but over time human workers became increasingly aided by machines (Spear, 2016).

Eventually machines became more advanced, able to function more independently, with humans playing much smaller roles in the manufacturing processes. Innovations throughout the manufacturing industry, as well as the invention of computers and the internet, has led to the highly efficient robots that dominate much of the manufacturing sector today (Lamb, 2010). These robots are aided by computer programs (Lamb, 2010), rather than physical labour. The first modern industrial robots appeared in 1961 and were essentially automatons, programmed to repeat tasks that were dangerous or cumbersome to humans (Lamb, 2010).

Since the advent of computerized technology, the manufacturing industry has benefitted immensely, with companies constantly working to increase outputs and streamline processes, using the ever-improving computerized technology being developed. On top of computerized technologies, the internet has changed the way businesses are conducted, allowing companies to harness social technologies the internet provides to innovate, expand their market base, and outperform their competitors (Kingsley et al., 2011). Businesses across the board have been impacted by the changes that computers and the internet have brought, with the manufacturing industry at the forefront of many of these changes.

1.2 The Problem

The majority of the research previously performed, with regards to project management and leadership, focuses on the importance of leadership in a much broader sense. No literature was uncovered that delved into identifying specific leadership factors and the impact that those leadership factors have on various phases of a project.

The current research project is the first to utilise the relevant literature on leadership factors to identify those leadership factors which will be the most impactful on the success of projects. It then goes a step further by relating each of the leadership factors to the project phases in the project's lifecycle to ensure a higher rate of project success. The lack of research into this particular area is unfortunate, given that it is possible, for leadership factors used incorrectly or at an inopportune time, to lead to project failure. This trend is something that was noticed throughout the empirical studies performed. The current research aims to rectify

this research gap by breaking down the relevant research, and from that compiling the top ten leadership factors to then prove the relations between the factors and the project phases.

1.3 Purpose and Objectives

This research falls under one primary objective that consists of several secondary or 'sub-objectives'. Throughout the body of work, these objectives will be analyzed, with primary research performed in an attempt to fill any research gaps. The main objective of this study is to identify the key leadership factors that have the greatest and the most direct impact on project success, in small and medium-sized enterprises (SMEs). The study will review relevant existing literature, employing both quantitative and qualitative data, to develop a set of specific leadership factors. These leadership factors being those that, based on the relevant literature, aid in the successful completion of projects performed within SMEs.

In addition, the research will study several areas that will serve as major milestones on the way towards achieving the primary objective. This includes identifying the leadership factors, and then linking them to project management in SMEs through conducting surveys, interviews and other data collection forms. These milestones have been divided into three distinct secondary objectives as follows:

1. Breaking down leadership into factors to identify the indispensable factors for project success;
2. Linking leadership factors to project phases by determining which factors are most important to each phase;
3. Presenting how the impact of leadership factors can drive project success.

Moreover, relevant areas of interest shall be reviewed and analyzed throughout the research phases, including, but not limited to SMEs, Leadership, Project Management, and Success.

It is apparent that this research will bring to light the correlations between the various areas of interest and the objectives. It is the intention that this research will lead to useful results for the academic world, business world, and numerous industries. Specifically, it is the intention that the information gathered throughout the research project provide benefits to projects performed by SMEs in the manufacturing industry. The essential purpose of this research then is to provide valuable insight into the leadership of projects so that project

managers may use this information to increase the number of successful projects that they undertake.

During the research work, some findings were presented in International Conference on Production Economics and Project Evaluation (ICOPEV) and the Doctoral Program in Industrial and Systems Engineering (DPISE) conference. The focus of the papers and presentation was around the 10 leadership factors found during the research work. The future plan is to publish some papers related to other research objectives and findings in conferences and scientific journals such as Leadership Quarterly, International Journal of Project Management and Academy of Management Journal.

1.4 Motivation and Research Question

The need for Information Technology (IT) and Communications Information Technology (CIT) innovations and upgrades is a constant in the manufacturing sector, with projects ranging from organizational restructuring of computer systems to automating processes that were historically performed by people. These projects play a crucial role in ensuring that companies stay competitive, so it is important that these projects run smoothly and are successfully completed. Much of that onus is placed on project managers and their ability to effectively lead groups of individuals to successfully complete shared end goals. Although any leadership style has beneficial aspects that contribute to the success of a project, the company culture, project type, and project team members will impact the way that a project is led. Projects in the manufacturing industry are no different. While it is recognised that every project is different and should be treated as such, it is also believed that through the proper implementation of leadership factors, both through how and when they are implemented throughout a project, the chance of that project succeeding is increased significantly. Therefore, the following research aims to answer the question: Which leadership factors will be most beneficial to the success of IT projects in the manufacturing industry and when throughout the project lifecycle will each factor have the most impact on project success?

1.5 Thesis Structure

This research document contains eight main chapters. The first chapter gives an introduction of the research work, including its background, the problem, purpose and objectives, and then

discusses the motivations and research question. The second chapter encompasses what the literature says about SMEs, project management, project success, leadership, relationship between leadership and project management in SMEs, impact of leadership on project success, and the manufacturing industry. The third chapter sheds the light on some related work that supports the research topic in question by looking at the similarities, limitations and gaps, methodologies for data gathering, data analysis, and conclusions and comparisons. The fourth chapter addresses the methodology used in this research in terms of what is the chosen methodology, on what sample was it applied, and how the analysis tools were used to support the methodology in place. The fifth chapter discusses the leadership factors in detail, along with their interconnections. The sixth chapter explains the timing of leadership factors in projects considering the phases of project cycle and the culture of each phase. The seventh chapter presents the results of each tool that was used in this research work and how the results were divided into different themes to answer the objectives of this research work. The eighth chapter comprises of an executive summary, research usage and benefits, limitations of the research, and ends with research opportunities.

2. LITERATURE REVIEW

This chapter will state some information found in the literature review in regards to SMEs, project management, project success and leadership. For the leadership topic, the definition, the importance, and the International Project Management Association (IPMA) views will be presented. In addition, this chapter will shed the light on the relationship between leadership and project management in SMEs, as well as the impact of leadership on project success. Finally, information on the manufacturing industry relating to all of the previous topics discussed will be presented. At the end of the chapter, there will be a summary of all what was discussed.

2.1 Small and Medium-sized Enterprises

Small and Medium-sized Enterprises contain two different groups of enterprises; small-sized firms and medium-sized firms which, depending on where you are, will be defined slightly differently. In the European Union (EU) an Enterprise is "considered to be any entity engaged in an economic activity, irrespective of its legal form. This includes, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity" (European Commission, 2003, p. 39). In the EU, as shown in Table 1, two factors determine an organization's eligibility to be listed as an SME – the staff headcount and the choice of either company turnover or balance sheet totals. Medium-sized firms in the EU will have less than 250 people, whereas small-sized firms will have less than 50. They also include a further group of Micro-sized businesses which contain less than 10 individuals.

Table 1: European SME Eligibility
(European Commission, 2017)

Company category	**Staff headcount**	**Turnover**	or	**Balance sheet total**
Medium-sized	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

The United States (US) International Trade Commission also uses a headcount to define SMEs, specifying these enterprises as those with less than 500 staff members (Hammer et al., 2010). In the US, SMEs also account for the majority of firms and approximately half of the Gross Domestic Product (GDP) that is generated by the non-agricultural industry sectors (Hammer et al., 2010). An American organization by the name of The Standish Group (1995) also gives a segmentation of companies, this time based on annual revenue, with large companies being those with revenue exceeding 500 million dollars per year, medium companies having revenue of 200 to 500 million dollars per year and small companies having revenue from 100 million to 200 million dollars per year.

SMEs play a large role in countries' economic development and are increasingly being tied to the internationalization trend across the world (Semrau et al., 2016). They are generally more prone to being entrepreneurially savvy than larger organizations. This entrepreneurial orientation has been shown to positively affect their performance, which may account, at least in part, for their increasing role on the international stage (Semrau et al., 2016). They play a large role, not only in the Western world, but also in developing countries where many family businesses and small-scale operations are crucial to keeping communities functioning and healthy (Miladi, 2014).

These smaller organizations are more difficult to assess because unlike larger corporations, they cannot easily be boiled down to a simple model (Adapa & Rindfleish, 2013). SMEs tend to be much more heterogeneous in their organizational structures and their overall cultures than the larger enterprises, i.e. SMEs are much more simple and flexible (Adapa & Rindfleish, 2013) which is part of the reason it is so difficult for experts to follow a straight forward formula that will work every time (Miladi, 2014). This is mainly because their smaller size fosters an environment where individuality and collaboration are key and there is ample room for businesses to grow and develop (Teruel, 2010). They also tend to have more organic cultures, and an easier ability to change the organizational culture, due to the fact that SMEs generally consist of a small group of people who have similar beliefs and values (Tidor et al., 2012).

This being said, it is still often the owner of the organization who has the most power to sway views and change the organization's culture and structure (Tidor et al., 2012). Looking at a specific segment, such as SMEs in the manufacturing sector, is one way of narrowing the field

of assessment so that a clearer image of what works well can be established. The owner of a company and the leaders of specific projects will benefit from gathering or reviewing data from both their own company and similar companies and projects, in an attempt to find the best fit for their projects and organization as a whole. In a position of leadership, they have the capability to adjust the company structure and culture to make sure that they are working in the most effective way possible.

Although cumulatively, SMEs have a very large impact worldwide on both employment and the economy, they are often forgotten about in discussions and initiatives to improve the efficiency and effectiveness of organizations. This occurs because each individual firm makes very little impact (Pastrana & Sriramesh, 2014). Consider the more recent drive for Corporate Social Responsibility (Pastrana & Sriramesh, 2014). Although it has been generating traction as a concept for decades, the vast majority of initiatives are focused on multinational corporations (Pastrana & Sriramesh, 2014). This, despite the fact that SMEs make up 90 percent of businesses across the world and account for anywhere between 50 and 60 percent of employment (Vives, 2006). That number gets even higher when you look at specific regions, with 95 percent of companies considered SMEs in Latin America and 99.7 percent of companies considered 'small businesses' within the US (Vives, 2006).

A very similar image of SMEs forms in Canada, where they are an important portion of Canada's economic growth, here making up over 99 percent of the economy (Industry Canada, 2013). In the manufacturing sector alone, approximately 70 percent of firms employ only 1 – 20 people, and only 15 percent of firms employ over 50 people (Behrens and Bougna, 2015). In Canada, SMEs are divided into two groups, small sized and medium sized enterprises with small firms comprising of less than 100 people and medium firms comprising of 100 to 499 individuals (Duckworth, 2014).

There has been a decent amount of research done on different aspects of Canadian SMEs, often looking at development strategies and ways they can improve to position themselves in their competitive markets regionally, within Canada, and globally. Often, this strategy includes the exploitation of IT and CIT by SME leaders, because of the relationship found between IT and CIT and productivity growth in the country (Duckworth, 2014). Productivity growth has been found to be the key driver in economic growth. Economic growth is an indicator of a country's well-being through its direct link to the standard of living of its citizens (Duckworth,

2014). As SMEs make up an overwhelming majority of Canada's economy, this puts them in a prime position to influence their citizens' well-being.

In an article published in Policy Options in 2009, the heterogeneous nature of the SME subsector is discussed and the authors advise against studying SMEs under "the one-size-fits-all approach, particularly as it pertains to those companies that are active in international business" (Moore & Polushin, 2009, p. 1). Instead they offer a division of SMEs into six groups that engage in trade, based on research done in Canadian SMEs over a 15-year period.

These six groups being as follows: SMEs that are an intimate part of the value chain of flagship multinational enterprises (MNE), SMEs that are the Canadian subsidiaries of foreign MNEs, SMEs that have gradually gone global, SMEs that are going global from conception, SMEs with an exclusive or dominantly North American strategy, and Family owned and operated SMEs (Moore & Polushin, 2009). Through this division, the authors offer a unique view of the differing strategies employed by SMEs in Canadian markets. They also note the intricate nature of SMEs with regards to the increase in globalisation shifting power dynamics across the world (Moore & Polushin, 2009).

SMEs provide a heterogeneous group of similar sized organizations that require much more extensive research to fully understand them. SMEs do have some similarities to larger organizations and multinational corporations however, which give individuals a starting point when it comes to determining how to improve the functionality of SMEs, as well as drawing from the research that is already available. SMEs, just like their larger counterparts, engage in many activities, typical of many businesses, such as using available technological advances to improve processes and using projects and project teams to improve the functionality of their firms.

2.2 Project Management

To fully understand what is entailed in Project Management, one must first understand what is meant by 'a project'. A project is a temporary and unique operation that has a specified start and end time, which is not a routine occurrence (PMI, 2017d). This specified time-frame leads to both a defined scope and defined resources, while the fact that it entails a specific set of operations, meant to achieve a singular goal, allows for individuals, who generally do not work together, to share ideas and knowledge for a period of time, in order to accomplish

the set goal (PMI, 2017d). Projects are supposed to be delivered with a certain standard pertaining to the budget, timeliness, learning-curve of employees, and integration between departments. In these scenarios, project management is required.

Based on the aforementioned parameters, the Project Management Institute (PMI) defines project management as the "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" (PMI, 2017c, p. 1). Another definition is provided by the United Kingdom (UK) Association of Project Management (APM) in their 5th edition of APM Body of Knowledge (2006). Project Management is defined as the discipline of managing projects successfully and is widely regarded as the most efficient way to introduce change (APM, 2006).

The APM holds that project management achieves this successful change by determining what has to be accomplished in terms of time, cost, and quality performance measures, by developing a plan to achieve the goals and constantly monitoring progress, by employing the correct Project Management tools and processes, and by utilizing individuals who are skilled in Project Management (APM, 2006). In other words, Project Management is simply the response to a need for organizations to manage the array of projects which are either already in action or are in the planning process (Görög, 2016).

Although practiced informally for as long as projects have been around, in the mid-20th century project management formed into a recognized profession (PMI, 2017d) in which it is now possible for individuals to become certified and take university and college courses and programs. There is an ongoing professionalization happening to the field of project management, driven by professional organizations such as PMI and IPMA coupled with a transformation of project management research (Gemünden, 2015). This emergence of structure and the wide range of studies and research being performed promoted the development of the project management profession.

Project Management is useful to all organizations, and that includes the wide-ranging sector of SMEs. Regarding SMEs and their use of projects, and by extension project management, a number of useful criteria can be determined. One of the most commonly used criteria are together dubbed the 'Iron Triangle' which is composed of Cost, Time, and Functionality (Scope) (Gemünden, 2015). The Iron Triangle consists of the three main factors that are often used to determine the success of a project. Namely that a project has to meet customer

expectations and requirements, it has to be on budget, and it has to be delivered on time (Hajiagha, Mahdiraji, & Hashemi, 2014).

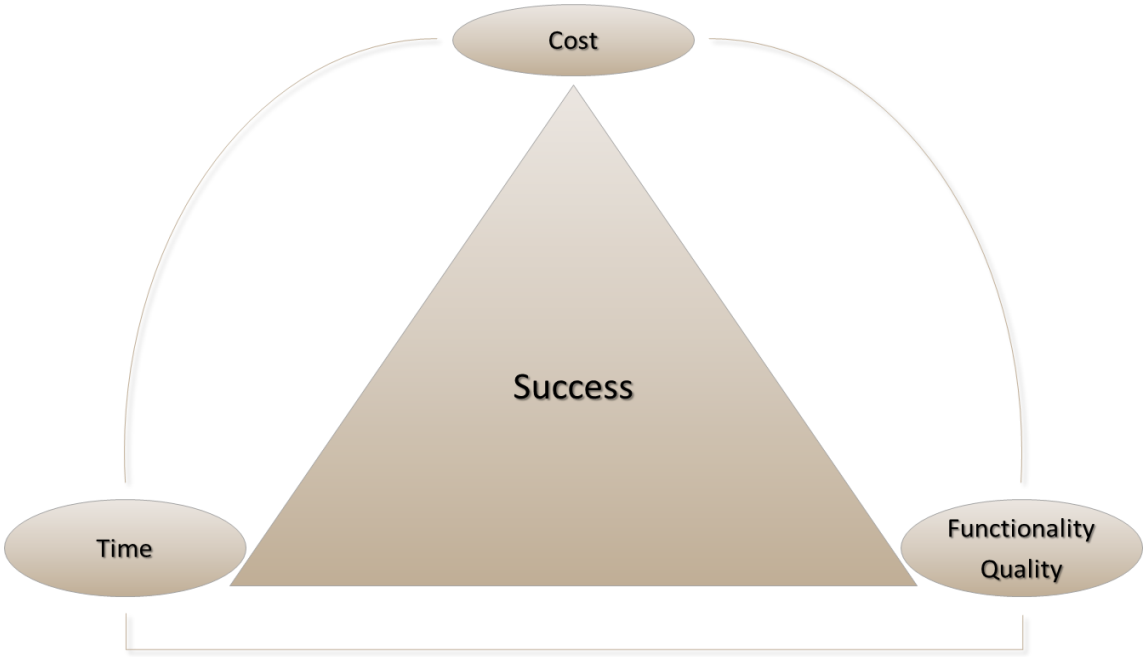

Figure 1: Iron Triangle
(Hajiagha et al., 2014)

The Iron Triangle shown in Figure 1 has been criticized for neglecting certain aspects of the project, namely the Stakeholder aspect, the Exploitation aspect, and the Strategic aspect (Gemünden, 2015). By ignoring the importance of these three aspects a huge opportunity to improve project management and project success is being missed. The first aspect, that regarding Stakeholders, refers to the "multiple, potentially contradictory, stakeholder perspectives [that give] a comprehensive view on project success" (Gemünden, 2015, p. 5). By considering other stakeholders besides the project sponsor and contractor – for example the users of the end result, and employees of the organization – projects can gain additional value. The Exploitation aspect is about how a project usually ends with outputs but these outputs need to be transformed and exploited into informative outcomes for organizations to reap the benefits (Gemünden, 2015). The Strategic aspect refers to the fact that most organizations now tend to implement their strategic goals based on their portfolio of projects, picking the projects to perform according to the added value that the projects have towards the organization's strategic goals.

The typical Iron Triangle does not generally address these issues, but Hajiagha et al. (2014) offer a slightly different Iron Triangle triad which switches the Functionality point to Quality. This broadens the scope and addresses the three points outlined above. As can be seen in Figure 1, the 'Functionality' point has been also referred to as the 'Quality' point, thus fixing the issue that is most criticized with regards to the typical configuration of the Iron Triangle.

The Iron Triangle demonstrates the connection between the three pieces and represents the importance for Project Management to find a balance for the project's objectives (Hajiagha et al., 2014). Although in the past this has mainly been a struggle between the cost-time balance, increasingly in industry today the quality factor is being weighted more heavily, thus increasing the difficulty of finding a balance between the different factors. On top of these factors, Project Management teams must also take into account the knowledge areas which according to the Project Management Body of Knowledge (PMBOK) guide are the 10 following areas for a typical project: project integration, scope, schedule, cost, quality, resource, communication, risk, procurement and stakeholder management (PMI, 2017a). The goal of using trade-off methods with the Iron Triangle while taking into account all of the other knowledge areas is to select appropriate methods to execute all areas, while minimising both the cost and the time criteria and maximising the quality (Hajiagha et al., 2014).

There are many different Project Management techniques and systems used to execute projects and each have their own set of benefits. Some examples of these include Waterfall methodology and Agile methodology, which are all options that project managers may choose to employ on their projects (The Standish Group, 2013). Adding to this, PMI now focuses on the Agile methodology in their 6th edition of the PMBOK (PMI, 2017a). Overall, utilizing formal Project Management as a way to run and organize projects has overarching strengths that cross-over, no matter what specific system or technique a firm decides to employ.

In fact, one of the very strengths of Project Management is how versatile it can be. There is no one-size-fits-all formula or a single methodology that must be strictly followed (Hajiagha et al., 2014). Project Management is meant to be adaptable so that it can be used for the wide variety of projects in existence and can blend seamlessly with changing circumstances that may arise during the execution of a project. Another strength of formal Project Management is that it gives structure and direction to an otherwise fairly fluid process. Project Planning, as it is formally known, is the process of planning out a project using schedules and charts, as

well as ensuring that progress is reported on throughout the process (IPMP, 2017). This allows for a more efficient and effective accomplishment of projects. Without a structured approach, resources will be more likely to be overused, and misallocated, while key ideas and approaches may end up overlooked.

According to The Standish Group (2013, p. 1), “More than 90% of organizations perform some type of project post-mortems or closeout retrospectives”. Most organizations are finding that these end-of-project reviews are helpful for improving their next project and their general project practices”. This shows that many organizations are doing well when it comes to many aspects of project planning. This being said however, in a lot of respects, they still have a long way to go. Few of these organizations captured this information into some type of electronic system. As well, the information that they had gained through these post-project reviews was often lost or forgotten (The Standish Group, 2013). It would seem then that although many organizations are working hard to engage initially in purposeful and useful practices to improve their projects and their project management techniques, the follow-through is lacking. This can lead to a decrease in the efficacy of projects and project management in the long-run.

Of course, there are also many obstacles that must be overcome when embarking on a Project Management mission. For example, constraints for projects will include time, available funds, available human resources/manpower, legal and environmental boundaries, technological issues and blocks, as well as team cohesion (APM, 2006). All of these are things for which the Project Management teams will be responsible. This will be done either through ensuring the project stays within any set of boundaries, or through managing resources so that the right people are completing the right tasks in a timely manner, so the project runs smoothly. Project managers are also often responsible for multiple projects at a time, particularly if the organization is a SME which has limited individuals who have the expertise to perform the role and which has many smaller projects happening (The Standish Group, 2013). SMEs generally do have smaller projects as they have less funding and more limited access to resources.

Many organizations engage in projects and therefore employ the use of project management. This makes it important for organizations to acknowledge the strengths they have and the weaknesses that their organization is confronted with, with regards to the projects and the management strategies that they employ. Generally, between 15 and 25 percent of projects

have been known to fail completely while another roughly 50 percent of projects that are started will be challenged (The Standish Group, 2009). This is a huge number of projects which don't meet the customer's needs and waste the organizations time, money, and resources. It is clearly an issue that needs to be further addressed.

2.3 Project Success

As was noted previously, a large portion of projects that are started either fail completely or are challenged. A challenged project is one which is received by the client either late, over-budget, and/or did not meet all of the requirements that it was expected to deliver (The Standish Group, 2009).

Figure 2 shows, from the year 2000 to the year 2008, the percentage of projects which were successful, challenged or failed. It demonstrates how few projects in total actually did what they were supposed to do throughout these eight years and how the percentage of projects in each category shifted from year to year.

Success generally means accomplishing a set goal, however success can also be measured on various different criteria where one part of something may have been a success but by another standard it was a failure. The vagueness in describing success as a general concept makes it equally difficult to determine what success is with regards to projects.

Defining project success is a difficult task since projects vary significantly and different individuals and institutions will consider a variety of different attributes when judging whether or not projects have been successful. As was noted by Mir and Pinnington (2014, p. 203), "Some [studies] conceptualise it as a uni-dimensional construct concerned with meeting budget, time and quality whereas others consider project success a complex, multi-dimensional concept encompassing many more attributes". Put simply, every organization does it differently and project success in not something that has been standardized yet, which makes it a difficult measure to assess.

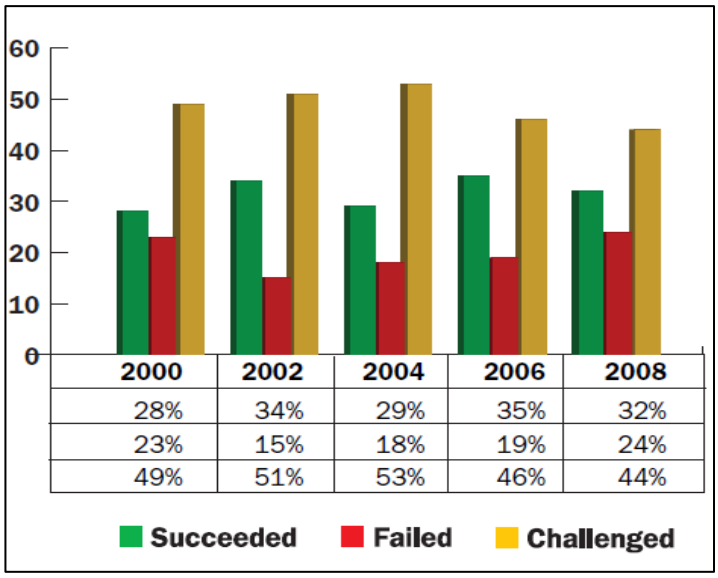

Figure 2: 2000 to 2008 Project Resolution
(The Standish Group, 2009)

One of the issues with trying to define project success is that success is not easily quantifiable and therefore is based much more heavily on the perceptions of stakeholders (Davis, 2017). Stakeholders include groups such as executives and owners of the organization, clients and users of the project's outcome, and employees – specifically those working on the project. The difficulty with determining success comes from the fact that stakeholders will often interpret project success in different ways (Mir & Pinnington, 2014). In a study done to examine multiple stakeholders' perceptions of project success in order to determine the reason behind the high failure rates of projects, it was found that the most common and overlapping dimensions used to ensure a successful project were communication, setting and meeting a schedule, identifying and meeting objectives, stakeholder satisfaction, making use of and acceptance of the finished product, as well as relevant cost and budgeting parameters (Davis, 2017).

In this study, although, many stakeholder groups had some overlap with regards to the dimensions they considered crucial to the success of a project. There were also many stakeholder groups between which no overlap in criteria existed (Davis, 2017). For example, the client and the executive groups, the user and the executive groups, and the sponsor and the project team were three instances in which the groups identified had no commonalities with regards to project success dimensions (Davis, 2017). This highlights the issue with pinning down an exact definition of project success and furthermore illustrates the need for more

research into what it actually means for a project to be successful so that avoiding failure is more straightforward.

One of the most commonly used methods to determine a project's success is by going with what the client deems to be successful. Discussing early on in the project's lifecycle what the successful project would look like, and what criteria need to be met for this to occur is a common and useful way to define the success of a project as well as to ensure the achievement of that success (Authenticity Consulting, 2006). Based on the client's determinants, the success of a project will often mean achieving the outcomes and results that were listed in the project agreement, solving the client's problem, finishing on time and on budget, and maintaining a high-quality relationship with the client throughout the process (Authenticity Consulting, 2006).

Although staying on budget is a huge indicator of whether or not a project was successful, it is certainly not the only indicator and is sometimes not the most important. Many projects are completed and deemed to be successful despite being finished over-budget for projects where the main goal is to save the firm's money in the future, this presents an interesting conundrum which is mirrored with many other criteria used for determining whether a project was a success. When presented with these kinds of situations it is clear how difficult it is to quantify the success of a project.

Success is a grey area which can be loosely defined but not easily given a specific list of determinants which will lead to success in every situation. It does not help that projects differ in size, complexity and uniqueness or that viewpoints about performance will vary across industries (Mir & Pinnington, 2014). In terms of Project success, the vagueness of 'success' can translate to 3 broad categories of measure in which all of the specific criteria can fit underneath. Going back to the idea of the Iron triangle, cost, time and quality are three broad categories which most of the aforementioned determinants of success can fit into. Think of the Iron Triangle as three category titles within which many different criteria can be picked to find the best combination of requirements to success for that specific project.

As is apparent in Table 2, most of the criteria that had been identified previously, as well as a few not formerly mentioned, fit under the 'Quality' category of the Iron Triangle. Most individuals will agree that, for a project to be successful, the 'Time' and 'Cost' categories should be met and the differences in what criteria should be met varies very little. The

'Quality' category on the other hand encompasses the majority of criteria that may be used to determine success and these measures are the portion of success that differ greatly from project to project.

Table 2: The Iron Triangle as Umbrella Categories
(Hajiagha et al., 2014)

Cost	Time	Quality
▪ Staying on budget ▪ For project overall ▪ For products used ▪ For salaries ▪ Human resources pulled from other areas of the business	▪ Completion of project on-time ▪ Setting and meeting a schedule	▪ Quality of end product ▪ Achieving outcomes/results listed in the project agreement ▪ Solving the client's problem ▪ Maintaining high-quality relationship throughout the process ▪ Communication ▪ Identifying and meeting objectives ▪ Stakeholder satisfaction ▪ Making use of final product/acceptance of project

To an organization called The Standish Group, a successful project must meet all three of their defined metrics – the project must be on time, on budget, and contain all the required features and functions. If the project does not meet some of these, for example it was delivered late, went way over budget, and/or did not have all of the required functions and features, the project is not considered failed but 'challenged'. A project becomes a failure if it was either cancelled prior to completion or was delivered but was never actually used (The Standish Group, 2009).

The Standish Group (2013) refers another way of achieving project success with a modified version of success factors to look specifically at the success of small projects with a focus on IT projects within different sectors of the economy. They define a small project as one that has a total labour cost of less than $1 million, not including equipment or software used. The Standish Group (2013) compiled a list of 10 factors, each with a number attached to them, indicating their relative impact on the success of a project (see Table 3).

The most important factor is executive sponsorship, or executive management support. Executive sponsorship as well as the rest of the factors are laid out in order of most to least importance in

Table 3. Each factor has been awarded a number of points out of 100, based on how much impact they have on the success of a project. The higher the points awarded, the more impact that particular factor has on the project success. The success factors given by The Standish Group (2013) for small projects are useful guidelines for project managers to pinpoint which aspects of a project should be focused on to achieve success.

Table 3: Factors of Success for Small Projects
(The Standish Group, 2013)

Factors of Success	**Points (100)**
Executive management support	20
User involvement	15
Optimization	15
Skilled resources	13
Project management expertise	12
Agile process	10
Clear business objectives	6
Emotional maturity	5
Execution	3
Tools and infrastructure	1

The first factor of success is Executive Management Support, which means that the success of a project is extremely dependent on having a committed executive sponsor/owner who will take responsibility for the project's outcome and support the project throughout its lifecycle (The Standish Group, 2013). This is deemed a crucial factor by The Standish Group (2013) who state that this individual will ultimately decide whether the project succeeds or fails, especially with regards to small projects where they have a lot more power to make decisions with less delegation involved.

The second most important success factor is User Involvement. Projects are developed as products and solutions for people (referred to as users) to use. Their input and participation are highly valued and crucial to the success of a project. It is important for cooperation and

collaboration to occur between the project team and the users throughout the project process so that, once the project is finished, the resulting solution is actually useful for the users (The Standish Group, 2013).

The third most important success factor is Optimization which refers to the scope of the project. Smaller projects have higher success rates and so breaking large projects down into smaller projects as well as focusing more on starting out with smaller projects in the first place will increase the number of successful projects that the organization undertakes. Many organizations with successful projects used the so-called Agile Process to manage their projects. Agile is all about paring down the scope of the project and ensuring that the processes are as lean as possible (The Standish Group, 2013). The Standish Group (2013) found that about 20 percent of the total features and functions provide around 80 percent of the value in a project, which is even more a reason to optimize projects by paring down their size and breaking large projects into smaller ones. It is known that sub-projects are much easier to manage, and this ensures the success of the big project that is divided into sub-projects. These first three factors provide 50 percent of the total points towards the success of a project and are focused much more on the execution of small project skills, along with success factors four and five, which do not pertain to leadership.

The fourth success factor is Skilled Resources, and this has to do with the people working on the project. The people who make up the project team and any other individuals they may consult with for expertise throughout the project are important components to ensuring a successful project. Skilled resources therefore can be thought of as “having the right people doing the right things at the right time” (The Standish Group, 2013, p. 17). Successful projects require skilled teams who are not only competent but able to deploy those skills during the project.

The fifth success factor is Project Management Expertise, also referred to as process management expertise. Project management expertise means having competent project managers or process masters – (PMs) for short – who will administer the natural progression of projects to a successful conclusion. PMs need to have good judgement and strong decision-making skills as well as the ability to simplify the complex processes that sometimes occur in projects. These top five success factors combined account for 75 percent of the total points awarded to all of the success factors. As such they account for a large majority of the success

or failure that a project may result in. As such, they should be focused on much more than the remaining five success factors.

The final five success factor are: using an Agile Process; having Clear Business Objectives; having Emotional Maturity; correct Execution of the project; and utilizing the appropriate Tools and Infrastructure. The Agile Process is all about embodying the small project philosophy and incorporates all of the first five success factors into its methodology. However, it is still a process guide which, while extremely helpful, is a tool that utilizes success factors rather than being a specific factor.

Having a Clear Business Objective is less important for small projects which is why this falls so far down the list. As mentioned previously, SMEs tend to engage in smaller projects due to their resource and money constraints. While a business strategy should still exist and align with the organization's goal and strategy, it does not need to be particularly clear when working on small projects and therefore is much less applicable to the vast majority of projects undertaken by SMEs.

Emotional Maturity is the eighth success factor down the list and it refers to the emotional state of the project environment. In other words, "having the skills to be self-aware, socially aware, self-managed, and to manage relationships … all important skills for a small project team and their stakeholders" (The Standish Group, 2013, p. 33). Since projects get resolved within the ecosystem, a healthy environment full of emotionally mature individuals will lead to more successful projects. Emotional maturity is an especially important skill for the project manager to have, as they are ultimately responsible for resolving issues that may arise between project team members.

Second last in importance for the success factors outlined by The Standish Group (2013) is Execution. Execution being the process that governs and controls the project, taking it through to its completion using a plan. Smaller projects are generally easier to execute than larger ones given that they require less time and money and are often much less complicated. Even though projects are easier to execute when they are smaller, they still do need to be taken to completion to be considered successes. As such it is important to put some time and energy focused on this particular factor.

Lastly, Tools and Infrastructures make up the least important of the ten success factors when it comes to small projects. Tools and infrastructure can be very useful aids for projects. This being said, often they are over used and relied upon too heavily which results in a lack of use of judgement and experiences from team members. This can ultimately hinder a project rather than help it achieve success and so with small projects, less is more, when it comes to tools and infrastructure.

As has been noted through the variety of different measures used to determine the success of a project as well as to achieve that perceived success, there truly is no one-size-fits-all method to approaching project success. It will be useful for those involved with projects to take into account what has worked for similar projects, as well as follow some of the more general guidelines to achieving a successful project. This is especially important for project managers who have the responsibility of ensuring that the project turns out to be successful.

This being said, a pattern emerges, and many similar pieces are repeated throughout the different studies and researches conducted by various groups. Much of this goes back to that idea of the Iron Triangle and ensuring that the cost, time and quality of the project are being accounted for. The Standish Group (2013) offers one set of guidelines which may aid in achieving a successful project, which emerges through being delivered useful functions on time, on budget and with quality. Many will note a theme developing through these project success factors; the important role that leadership plays directly or indirectly in many of the metrics that The Standish Group provides for small projects.

Project success is known to be an important component to not only the success of businesses but also to the success and steady running of the global economy (Serra & Kunc, 2015). As has been mentioned previously, to achieve this success, it is crucial that the project management team defines, in no uncertain terms, how they will be evaluating whether each project completed is a ‘success’ (Serra & Kunc, 2015). Throughout most of the history of project success, research and projects have been focused on the ‘golden’ idea of the Iron-triangle. More recently however, researchers and groups, such as the Standish Group, have switched the focus to a more inclusive view of project success.

The Standish Group are not the only ones who believe that the original Iron Triangle is an outdated model for project success. Often, project managers who focus solely on achieving these ‘output’ goals end up completing projects where the customers or the sponsors are left

unsatisfied with the results (Shenhar & Dvir, 2007). A project manager's goal is to quite literally change things (Tayntor, 2010), and this change to organizations, whether it be structurally or with the implementation of a new technology, cannot be done well if the project manager only has the goal of finishing the project in mind. Since the 1980's when the output-focused Iron Triangle was the norm, research on project success has shifted to a more customer-oriented approach (Badewi, 2016). This has brought to light new ways of leading a project to a successful conclusion – and how to determine that this success has been achieved. While in the past, the short-term efficiency of a project was often highly valued - sometimes at the expense of the project's long-term goals, both for the organization and for their intended customer - this is increasingly no longer the case.

This being said, the adoption of a more inclusive approach to project success evaluation in organizations has been slow, with many organizations clinging to the idea of evaluating solely the efficiency of projects (Serra & Kunc, 2015). One reason behind this may be because of how difficult project benefits are to measure (Serra & Kunc, 2015). This is particularly the case with regards to the benefits that occur long after the project has been finished, for example benefits incurred during the product operation stage (Serra & Kunc, 2015). A visual representation of the various levels of benefits throughout a project's lifecycle and after its completion can be seen below in Figure 3.

The simple definition of a benefit, set out by Ward and Daniel in 2006, as "an advantage on behalf of a particular stakeholder or stakeholder group", does not take into account all of the various considerations (Badewi, 2016, p. 763). An extended version of this definition is mentioned by Badewi (2016), which does bear in mind the multiple considerations of varying projects and their stakeholders, can be divided into three parts:

1) Benefits cannot be realized without a current change of state;
2) For each aspect of project success, those being the management and the investment, measures should be defined to assess each of the success criteria;
3) Benefits should be assigned to a particular person or department whose responsibility is to ensure the benefit is realized.

The more comprehensive definition then, combining all of the aforementioned pieces of a benefit, is set out by Badewi (2016, p. 763) as "a measurable advantage owned by a group of stakeholders incurred by changing the current state through project management

mechanisms". These benefits can be measured using Key Performance Indicators (KPI) which are a combination of both financial and non-financial indicators (Badewi, 2016).

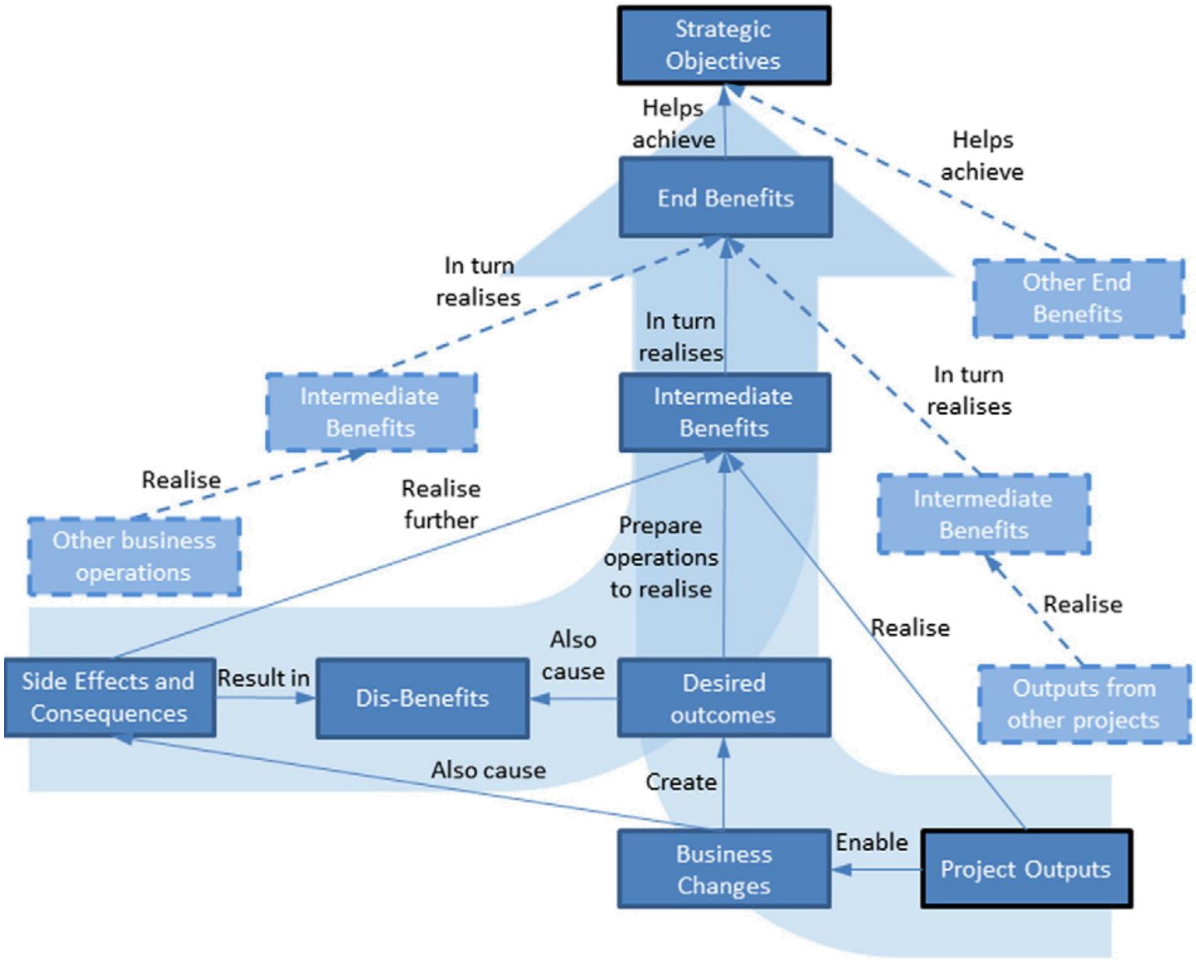

Figure 3: Chain of Benefits
(Serra & Kunc, 2015)

As can be seen above in Figure 3, benefits come into play throughout the project lifespan and can have a spin-off chain of benefits – and potentially consequences. It represents a conceptual interpretation of benefits realisation management, and the many levels of benefits which can be achieved, from the project outputs to the achievement of business objectives (Serra & Kunc, 2015). This intricate chain of benefits resulting from project outputs – many indirectly – is partly why it is so difficult to quantify the amount of benefit that any given project will result in.

Now that project success has an increasingly overall-business strategy- and customer-oriented meaning within many organizations, it is crucial that project managers do not achieve the set-out objectives of a project only to have their endeavour fall into the 40 percent of projects

whose objectives do not align with the organization's strategy (Musawir, Serra, Zwikael, & Ali, 2017). Often, top executives of companies' demand completed projects from project managers that satisfy the people funding the projects, the organization itself, and anyone who might benefit from the good or service the project is intended to generate (Musawir et al., 2017). This amount of pressure calls for structured and actionable plans, as well as project managers with effective leadership skills and the ability to properly govern projects (Musawir et al., 2017). The use of a project management framework, whose goal is to achieve the short-term efficiency of a project while ensuring that the goal of achieving long-term effective results is not compromising (Badewi, 2016), is one way for a project manager go about developing projects to guarantee their successful completion.

In an article written by Badewi (2016), the link between the approaches of project management and Benefits Management (BM) are discussed and analyzed. BM or Benefits Realization Management, as it is sometimes referred to, is a framework which was initially designed to improve the success of projects in the IT sector (Badewi, 2016). Put into a definition, benefits realization management is "a set of processes structured to close the gap between strategy planning and execution by ensuring the implementation of the most valuable initiatives" (Serra & Kunc, 2015, p. 53). While it has now been applied to projects in a number of other sectors since its establishment (Badewi, 2016), the fact that it was initially designed for IT projects makes it a particularly promising management framework to review, when looking at achieving success for IT projects in the manufacturing sector.

The BM process was originally developed in the mid 1990's as a response to the dissatisfaction surrounding the IT and Information Systems (IS) project results that used traditional project management techniques (Hesselmann & Kunal, 2014). It has been realized that there is a need for project management concepts that focus on the benefits of the project in terms of long-term adoption by the organization and not simply on getting the project done (Hesselmann & Kunal, 2014). This has landed researchers on the concept of BM. In some aspects, BM can even be seen as a discipline all in its own, investigating the achievements of the 'benefits' of IT projects (Ward, Taylor, & Bond, 1996).

Since its inception, many studies have been conducted that come to the conclusion that BM is an effective strategic framework (Hesselmann & Kunal, 2014). This being said, it is still a management technique in its infancy and as such, the adoption rate of this strategy by

managers is still quite low (Hesselmann & Kunal, 2014). As was pointed out in the article of Musawir et al. (2017) published in the International Journal of Project Management, the PMI found that only 17 percent of organizations have reported achieving high-level BM realisation maturity, a figure which has remained steady between the years 2014 and 2016.

Research surrounding BM has primarily been focused on the process and the employed methods, neither of which provide much insight on the extraneous elements that may assist in understanding why it is not being utilized more frequently (Hesselmann & Kunal, 2014). Instead of such a single-lensed view, it may be beneficial to apply a more holistic approach by focusing on other topics such as employee concerns or organizational culture (Hesselmann & Kunal, 2014). This may allow for the adoption of BM methods through the development of a more complete understanding of what is preventing managers from using the strategies (Hesselmann & Kunal, 2014). In addition, this will help to identify solutions so that this approach can be incorporated more consistently throughout project management (Hesselmann & Kunal, 2014). Some scholars have suggested that BM makes the strategic relevance and value of each project clearer, enabling an increase in the effectiveness of strategic project governance (Serra & Kunc, 2015).

The idea that BM puts forth of strategic governance entails that organizations work towards planned benefits (Serra & Kunc, 2015). This proposition makes understanding the resistance to, and encouraging the uptakes of, BM even more appealing. It would appear that organizations with stronger processes for BM, and through this stronger governance, end up prioritizing the projects which will deliver the most relevant benefits to the organization (Serra & Kunc, 2015). In the sense that benefits realisation management will increase project governance by focusing on those projects which will achieve tangible benefits to the organization and their customers, it is easy to argue that from a strategic standpoint, BM can reduce project failure rates (Serra & Kunc, 2015).

There exist various BM templates that have been created over the years since BM was first described in the mid 1990's (Hesselmann & Kunal, 2014). The most widely cited of these still today, however, is the Cranfield Process Model (Hesselmann & Kunal, 2014). The Cranfield Process Model divides BM into five key stages (Hesselmann & Kunal, 2014). These stages have been laid out below in Table 4 along with descriptions for each stage.

Table 4: Cranfield Process Model
(Hesselmann & Kunal, 2014)

#	Stage Name	Stage Description
1	Identifying and structuring benefits	Consists of identifying the benefits, determining measures to be used, and finding the links between the IS/IT project investment and the changes the business must go through to achieve this.
2	Planning benefits realization	Consists of allocating the responsibilities of the project and planning for the changes that will need to be made.
3	Executing the benefits realization plan	Where IS/IT initiative is actually implemented as well as the business changes that go along with the project.
4	Evaluating and reviewing the results	Focuses on the evaluation and review of the IS/IT initiative as well as a comparison on measurements before and after the implementation to determine how well the project benefits were achieved.
5	Discovering potentials for further benefits	Comprises of planning for and realizing benefits that were not initially anticipated and documenting new experiences to learn for future projects.

This well-rounded start-to-finish approach to project benefits management with a focus on the usability of the final product is reminiscent of the value structure laid out by Authenticity Consulting (2006) and many other reports. From these studies, it is apparent that value and customer satisfaction-based project management strategies are a good way to ensure that when projects are finished, they are considered successes. Keeping this in mind, the various BM frameworks, and with a specific regard to the Cranfield model, allows for a more structured technique to achieving project success with a more value- and customer-based approach.

When using a framework that works towards achieving the longer-term goals of a project, those being the customer- and value-oriented goals, it is still important to remember the other two main objectives laid out in the Iron-Triangle model for projects. With an increasing focus in businesses for projects to satisfy their customer needs and add value to the organization's overall strategies, project managers cannot forget that the timeliness and the cost of projects are still important features to success.

For this more complex approach to project success and project management, a division of terms is one way to differentiate the various types of project success. One such division that

has been circulating in discussions about project success, divides the measures of project success into those which focus on achieving the actual objectives of a project, and those which focus more on the return on investment that the project achieves (Badewi, 2016). The names often given to the former category of project success criteria are the 'project's management success', or the 'internal project performance' (Badewi, 2016). On the other hand, the name given to the success of a project in achieving its intended return on investment is the project's 'investment success' (Badewi, 2016). Through the use of diversified names, the emerging ideas and success measures can be identified easily between one another, allowing for a more cohesive understanding of which measures are being asked for, and clarifying the vague and overwhelmingly multifaceted term of 'project success'.

According to research performed by a number of individuals, project investment success is the more difficult of the two to achieve. This is because it requires a lot more systems-thinking and focuses not only on the internal environment but on the external environment as well (Badewi, 2016). On top of this, relational-oriented success factors, such as communication and leadership, are more important to achieve project investment success, whereas task-oriented factors are more prevalent when aiming for the achievement of a project's management success (Badewi, 2016).

According to Badewi (2016), project investment success and benefits success, while similar, are not the same thing. Project investment success is much more inclusive than BM, incorporating both the cost of the project as well as financial and non-financial benefits from the project (Badewi, 2016). From this perspective, BM almost acts as a stepping-stone or a tool to achieving a more comprehensive action plan for project success.

In all of the varying aforementioned approaches, a common theme emerges. Whether it be the key success factors from The Standish Group or the use of benefits realisation management, each approach to achieving project success involves the use of well-performed project management in some form. Project management has become a field in its own, with extensive research and resources dedicated to using it as a tactic to solve the problem of failed projects (Carvalho, Patah, & Bido, 2015). As such, project success and proper project management have become intertwined ideas.

One core school of thought, mentioned throughout the literature, is the idea of 'project management maturity' and its impact on project success. This idea of the maturity of project

management is a term that stems from the fact that there are a variety of different techniques that can be employed in formal project management (Tayntor, 2010). The degree to which these various techniques are employed in a project is sometimes referred to as the project's maturity (Tayntor, 2010). Some industries even define themselves and their progression in projects by this maturity level, and as such, have developed measures and entire methodologies to track progress (Tayntor, 2010).

One of these such methodological frameworks comes from the Software Engineering Institute (SEI) (Tayntor, 2010). It is called the Capability Maturity Model (CMM) and while it was specifically designed for the Software Engineering field, Tayntor (2010) outlines the model in a table so that the steps can be applied to any industry. This table, which can be seen below as Table 5 overview, outlines the five milestones in the CMM, often called the maturity pathway, which can guide project managers to assess their organization's progress (Tayntor, 2010).

Table 5: SEI's CMM
(Tayntor, 2010)

#	Level Description	Level Characteristics
1	Initial	Results are unpredictable because they are dependent on individuals' skills and efforts.
2	Repeatable	Basic processes have been established on a project level, making it possible to replicate performance on similar projects.
3	Defined	Standard processes have been integrated across the organization and are used consistently on all projects.
4	Managed	Detailed measurements and qualitative controls make it possible to predict results.
5	Optimising	The organization actively seeks to improve the process through innovation.

Many believe that there is a positive relationship between the ideas of project management maturity and project success; that a company who devotes increased time, energy, and resources on developing and expanding their project management capabilities will have greater project success and increased project performances (Carvalho et al., 2015). This is why

structured project management frameworks and the research attempting to identify the reasons behind project successes and failures have become so popular.

Tayntor (2010) points out in her book that you can point towards nearly any organization and find an unsuccessful attempt at change. This change is often developed and implemented through projects, hence why so much energy has been put into finding some kind of 'special' framework to guarantee that every project undertaken ends up a success story. One such framework, albeit a very broad one, comes from William Bridges, in the form of Four P's, that he argues should be followed in order for any change to be successful (Tayntor, 2010). These four P's have been laid out in Table 6, as were described by Tayntor (2010).

Table 6: The Four P's for Successful Change
(Tayntor, 2010)

The P	The Description
Purpose	The reason for change to be implemented needs to be clearly identified and communicated. An organization, client, or funding body will not want to support a project for which they do not fully understand the purpose. The benefits of a project should also be clearly identified so that all stakeholders are certain about the project intent.
Picture	People must also have an understanding for the end-state, once the project has been completed and fully implemented. Another way to look at this is as the vision of the project, both on an overall level and on individual and departmental levels within the organization.
Plan	The team working on the project must have a plan to achieve that end-state – as well as set processes they intend to use to implement the plan. Again, the plan must be communicated to everyone who will be impacted by it.
Part	It is important that everyone involved in the change be informed of what part they will play and how they are expected to achieve this role. Without this, the project runs the risk of having individuals working against each other or simply deciding not to work at all.

Two other components that are also briefly mentioned as important to achieve a successful change are sustainability and commitment (Tayntor, 2010). These two points have been mentioned previously as being important components in other frameworks as well as being logical additions to a strong project in general.

While implementing these steps for stronger project management, and therefore increased project success, makes sense from a logical standpoint, sadly the literature in support of this argument is sparse and generally inconclusive (Carvalho et al., 2015). Maturity models, or

models designed to implement a systematic project method, are one way to tangibly incorporate the idea of project management maturity into the achievement of project results and success (Carvalho et al., 2015). Given, however, that there is a serious gap in the literature with regards to the relationship between project management and project success, it is possible that the inconclusive evidence is occurring simply because not enough research into the topic has been performed to date (Carvalho et al., 2015). This may be the beacon of hope that researchers and organizations who believe in project management have been using, and why they continue to work to perform research on the topic.

A study conducted by Carvalho, Patah, and Bido (2015) aimed to fill this gap through research conducted on the relationship between two different aspects of project management and the results of projects. The first aspect of project management, whose relationship to project results was being assessed, was project management training efforts, while the second aspect was the project management context (Carvalho et al., 2015). Project management context essentially refers to developing and using Project Management Methodology (PMM), and providing both organizational and administrative support (Carvalho et al., 2015).

From the literature review conducted in this study, two slightly differing collections of five success criteria were identified. In the first account, the five key success factors were given by Carvalho et al. (2015) are as follows:

1) Efficiency;
2) Effectiveness;
3) Impact of the project on society;
4) Relevance to the real needs and priorities in society;
5) Sustainability.

The second set of discussed success factor criteria were similar but with some slight differences. The second set of criteria given by Carvalho et al. (2015) are as follows:

1) Efficiency;
2) Impact on the customer;
3) Impact on the team;

4) Business and direct success;

5) Preparation for the future.

As can be seen by comparing the two criteria lists, the measure of efficiency was identical in both measures, and the impacts on society as a whole were incorporated into the criteria in both lists, albeit in different ways. As well, the 'sustainability' criterion in the former list may be compared in various ways to the 'preparation for the future' criterion in the latter list, since the whole idea behind sustainability is the ability to maintain something into the future. Where the lists diverge the most would be between the inclusion of an 'effectiveness' criterion in the former criteria list and the inclusion of a 'business and direct success' in the latter criteria list. However, even these two points have some overlapping meaning, for example, the 'effectiveness' and 'business success' can be referring to the effectiveness of a project to achieve direct success in the business.

The literature review also reveals that benefits do come from a systematic project management approach, because, if done using a good framework and implemented properly, project management capabilities can be stored for future use both across time and locations (Carvalho et al., 2015). As well, project management done right ensures that information and knowledge is stored and can be easily recollected, making the organization less vulnerable than if that information and knowledge was only being captured in the minds of particular individuals working for the organization (Carvalho et al., 2015). This is due to the fact that human brains have a tendency to mix up information or forget things when recalling information, something that is not an issue when information is immediately documented.

In terms of the study that Carvalho, Patah, and Bido (2015) conducted themselves to fill the literature gap, they used a field study of a multinational organization across three of its locations in South America over a three-year time frame. Various business departments were analyzed and a variety of sources were drawn from to use as evidence (Carvalho et al., 2015). As well, a number of projects were chosen to evaluate in each business unit, so that a valid sample could be compiled, and a number of control variables were established in an attempt to eliminate as many external possible connections as possible (Carvalho et al., 2015).

The results from the study show above all that more research needs to be conducted to gather a more complete picture, since there exist intricacies that are difficult to extract from one

another to determine what impacts are causing which outcomes. From what was gathered, the study showed that both project management training efforts and project management enablers – which relates to maturity – have a significant positive effect on the schedule performance of a project, but fail to show significant positive relationship on the project performance measures (Carvalho et al., 2015). They note that more research should be conducted and more energy devoted to project management, especially with regards to the soft side of project management, to which the above measures are more related (Carvalho et al., 2015). The soft side of project management refers more so to the management of stakeholder's roles, individual capabilities and skills as well as the idea of project ecology (Carvalho et al., 2015).

2.4 Leadership

What is mentioned in the literature about the definition and the importance of leadership will be outlined in this section. Then, it was important to highlight what the IPMA said on leadership.

2.4.1 Definition

It is difficult to define the term 'leadership' without using the root word 'lead'. To find a perfect way to encompass all that leadership means is not easy. Simplifying, leadership is understood as the act of guiding or directing a group of individuals. However, this definition is not an exact match, as it does not fully explain what leadership is. A more comprehensive definition of leadership is as follows: "Leadership is a process of social influence, which maximizes the efforts of others, towards the achievement of a goal" (Kruse, 2013, p. 1). Along these same lines, the University of Sherbrooke (2016, p. 1) defines leadership as "the ability of an individual to [direct] or lead other individuals or organizations in order to achieve certain goals. It will then be said that a leader is someone who is able to guide, influence and inspire".

Leadership is so much more than simply managing or even influencing people. It is a combination of many different aspects and attributes including influencing others, organizing both individuals and plans, taking initiative, and engaging and inspiring groups of people towards achieving common goals. Often it gets confused with managing or coaching but these are examples of roles where leadership may be employed. This being said, leadership is not

the only important aspect needed to be a manager or a coach nor is it strictly necessary to perform either of these jobs.

Another way to look at leadership is to understand change management. Change management is a type of leadership that often involves discussions about what is and is not working, as well as where improvements can be made (MRH, 2014). These discussions tend to be lengthy and highly emotional (MRH, 2014). Change leadership is crucial because industries and situations are constantly in flux, and not everyone handles changing work environments the same way (Perrin, 2012). In times of change, it is starting to be recognized that a softer approach is necessary to lead a team, rather than the structured and unyielding leadership style that was often thought of a necessary to show strength (Perrin, 2012). Remember that change is difficult for people because it means giving up the comfort and predictability of the status quo, instead allowing for the uncertainty and anxiety that often comes with change (Issah, 2018). Due to the difficulty people have dealing with change, and the emotional stress it can often have on individuals, change leaders need to be able to understand and harness the power of emotional intelligence (Issah, 2018).

Emotional intelligence being the "set of emotional and social skills that influence the way we perceive and express ourselves, develop and maintain social relationships, cope with challenges, and use emotional information in an effective and meaningful way" (Mayer, Caruso, & Salovey, 2004, p. 197). Change leaders need to possess the five associated components to emotional intelligence in order to be more successful at moving people through times of change, those being: self-awareness, self-regulation, self-motivation, empathy, and social skill (Issah, 2018). Emotional intelligence is crucial for helping individuals and teams through change process, something that is inherent in the nature of projects. Thus, change management requires an emotional maturity and intelligence to help project teams move organisations through times of change.

When approaching leadership as a more guiding role, leaders are helping team members to make their own decisions and find solutions rather than deciding how the project will be executed themselves. Taking a guiding role in leadership is about being able to guide and influence the cognitive behaviours of people, ideally to the benefit of the project and organisation as a whole (Gallagher, Mazur, & Ashkanasy, 2015). This can be an incredibly

useful skill in projects because of all the change that is occurring within the projects which makes necessary for people to be on board and have critical thinking skills (Issah, 2018). Different people will require different approaches and different guidance methods throughout the process, and so a leader that can alter their strategies of guidance is beneficial (Perrin, 2012).

On the other hand, approaching leadership from a more directive standpoint is a more harsh and strict option. Directive leadership has an association with authoritarian leadership style, the style associated with a hierarchal organisational structure where one individual makes decisions and gives clear directions and rules to others (Li, Liu, & Luo, 2018). While it does have positive aspects, research has found that groups under directive leadership are more dependant on the leader, and it can dampen creativity and initiative in problem solving scenarios (Li et al., 2018). Overall, directive leadership has not been shown to be helpful in group settings, especially where group decision-making is involved, such as project and portfolio environments.

2.4.2 Importance

Leadership is an important aspect of any business. In SMEs leadership is especially important to keep companies afloat when competing against multinational corporations and larger firms. As is the case with many research topics pertaining to businesses, leadership and its effects have been much more thoroughly studied with regards to large organizations than with SMEs (Szczepańska-Woszczyna & Kurowska-Pysz, 2016). It is well known that SMEs function differently in many respects than large corporations and therefore it is seen as a necessity to study the effects of leadership on SMEs as well (Hillary, 2000). As research directed towards SMEs is much sparser it is important to draw from the small amount of research available to enact change in the sector as well as to encourage further research to be performed (Hillary, 2000). Rather than simply using research that only accurately reflects the situations of large organizations, research on leadership in SMEs will allow for a more accurate and relevant picture to be formed.

In one study done on leadership in SMEs, research on its importance was conducted as well as the aspects which enabled sustainable business practices. One of the key findings was that the effective implementation of actions for sustainable development was dependent on how

convinced the owner or managers were of these activities (Szczepańska-Woszczyna & Kurowska-Pysz, 2016). This applies to more than just sustainable business practices. Moving anything forward in SMEs requires owners, managers and executives to be fully committed to the goal of showing employees that they are devoted to the cause as well as act as role models for the rest of the employees.

This is in line with the Standish Group's successful projects' criteria with the most important factor to project success being executive management support and the firth most important factor being project management expertise, both of which require participation, support and leadership from management and upper management roles in the company. Although these pertain specifically to projects, they can also be applied to leadership in general for companies.

Basing leadership on the comprehensive definition provided in a Forbes magazine article, a leader is someone who influences change, and transforms individuals and followers' performance (Kruse, 2013). From this definition the idea of transformational leadership, which was developed by Bass in 1985, is a logical step. A study done by Wang et al. (2011) examined the four behavioral characteristics that transformational leaders exhibit.

The first behavior of transformational leadership is Inspirational Motivation through which they develop and articulate a shared vision and high expectations that are motivating, inspiring, and challenging (Wang et al., 2011). The second behavior is Idealized Influence, which is serving as a role model by acting in ways that are consistent with the vision. The third behavior is to Intellectually Stimulate Individuals to challenge assumptions and the fourth behavior is Individualized Consideration which is essentially attending to the needs of individuals and treating every person as unique so as to foster trust. These four leadership criteria act as a baseline and have been shown to improve performance in various areas, including at the team-level, as well as at the individual level with regards to contextual performance – or voluntarily motivated work behaviors (Wang et al., 2011).

Another set of criteria is given by Maladzhi, Yan, and Makinde (2012) in their paper looking at the connection between leadership and innovation. The criteria they have come up with are as follows: ability to ascertain external factors, fast action orientated, high gain risk taker, immersed in progressive change, inspirational and motivation, charismatic, passionate, and visionary leaders. As innovation is often a key component and driving influence on the

formation and execution of projects, the outlined criteria are useful in the context of both projects and leadership as well as their interconnected nature.

For the large Canadian Corporation, Sears, a further set of 12 criteria have been developed which they use for their hiring processes at individual locations. These criteria, modelled in

Figure 4, give another perspective on what characteristics make a good leader. Although these criteria were developed for a larger corporation and not an SME, they still contain merit given that large corporations need strong leadership at many different levels to function properly. As well, much of the same skillset will be required for a good leader at an SME as would be required to be a leader for a larger corporation such as Sears. They group these twelve criteria in relation to what they call the 'three P's', namely Passion for the customer, People adding value, and Performance leadership (Rucci et al., 1998). Each of these three P's is the point of a triangle connecting them all to show their relationship as a function of leadership. Each of the criteria fits somewhere along the spectrum either in one group of the 'three P's', between two groups, or in the middle where all three of the groups are relevant.

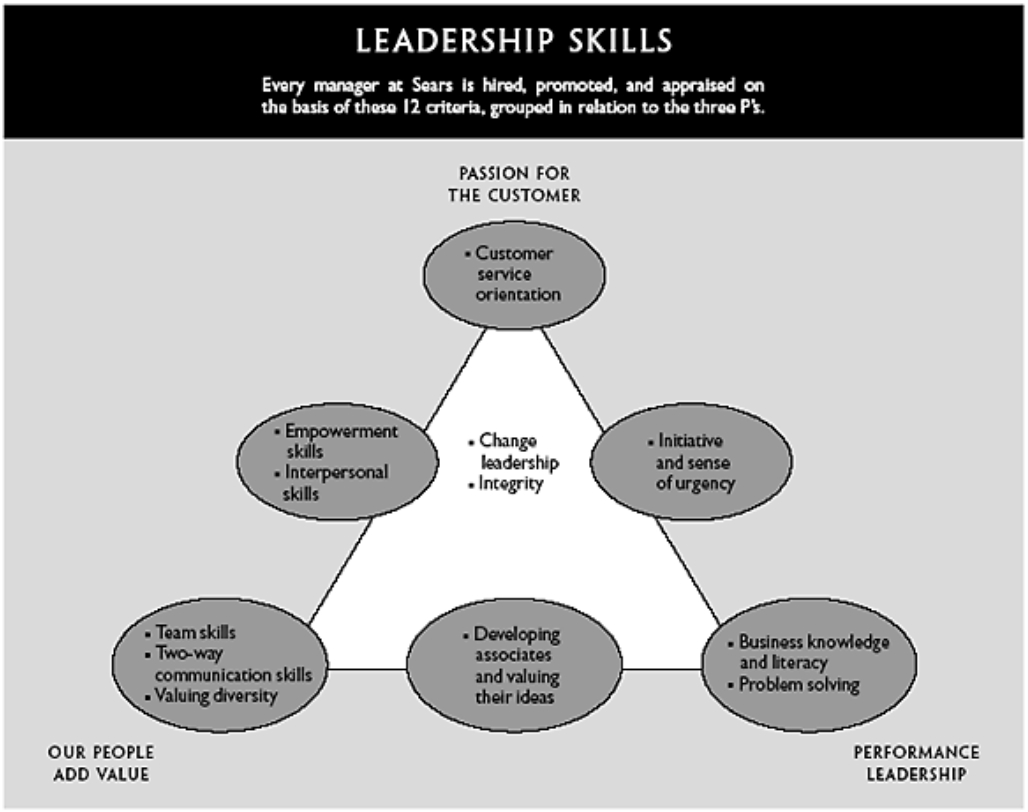

Figure 4: Leadership Skills
(Rucci et al., 1998)

The leaders of SMEs often beat the odds and rise up in economies alongside the large corporations with deep pockets and are sometimes even able to succeed where their larger counterparts have failed. This is frequently due to their ability to lead in unconventional ways and their creative strategies in absence of seemingly endless resources (Chanyatipsakul & Wongsurawat, 2013).

In a study done of entrepreneurial SMEs around Bangkok, Thailand, a number of strengths emerged with regards to the leadership strategies and habits of SMEs. One of the main strategies used by these SME leaders was to experiment to discover what worked and what did not. This was a strategy also employed by the Chinese government, essentially 'feeling one's way forward', which led to the remarkable growth and modernisation of the Chinese economy (Chanyatipsakul & Wongsurawat, 2013). This strategy does present many difficulties for SMEs, mainly because it means constantly changing direction with the threat that something might not work, hurting revenue and funds.

Another strength that SME leaders had was the ability to make do with limited resources, something that larger firms often do not have to deal with making them more vulnerable to reliance on resources rather than ingenuity. For these SME leaders this entailed focusing on their strengths rather than their weaknesses and working with the resources they had available (Chanyatipsakul & Wongsurawat, 2013). A third theme that was noted with most of the SME leaders in the study was an extreme sense of optimism when it came to challenges. Their ability to look at a challenge and find solutions allowed them to continually press forward and re-evaluate when something was not working. Finally, the study found that most of the individuals they interviewed were well aware that their business was at high risk of failure and so they always budgeted for failure. This led to SMEs being generally more resilient in light of the many failures that they can and will face throughout their business endeavours and especially during the early stages, when their business is still growing and developing (Chanyatipsakul & Wongsurawat, 2013).

With all of the strengths that leaders in SMEs have, they also face many obstacles - some of which have previously been touched upon. One of the biggest obstacles that managers and owners in SMEs face is the constant threat of losing employees to larger companies. Big corporations can offer higher pay and more reliable job security which draws talented individuals away from the smaller organizations that do not have the funds to offer

competitive pay (Chanyatipsakul & Wongsurawat, 2013). To overcome this, the individuals running the organization need to be able to inspire their workers and ensure that they are passionate about what the organization is doing. Much of this ability to inspire and motivate employees goes back to being a good leader.

One of the other major obstacles that leaders of SMEs face is the difficulty that hard times hitting entire markets or economies has on these smaller companies. When industry or economy wide difficulties emerge, SMEs have fewer resources and fewer safety nets to keep them from going under. This means their leaders need to be even more resilient and better at motivating and empowering employees as well as using creative problem-solving methods to keep the organization up and running (Cooper, 2010). Many businesses, especially in the SME sector, are constantly forced to embrace change. This is particularly true when cuts in both the private and public sector start occurring, forcing stresses such as job insecurity, restructuring, reorganization and downsizing (Cooper, 2010). Many SMEs rely on public or private funding and so they are often more affected by these events than the larger organizations with access to a greater amount of their own funds (Cooper, 2010).

Finally, although, as mentioned above, many SME leaders are able to compete in marketplaces due to their ability to innovate and inspire employees, innovation is often still something that some SME leaders need to improve upon (Maladzhi et al., 2012). Innovation and leadership are positively correlated and when leaders have a strong ability to influence innovative processes in the business, they are much more competent leaders (Maladzhi et al., 2012).

Leadership is an important aspect to any business and this importance should not be down-played, especially when it comes to its relationship with management and executive roles within an organization. It is intricately tied to the idea of management, where it plays an important role in keeping teams, organizational divisions, and specific projects on track for what they are supposed to accomplish. Leaders of SMEs are of particular interest due to their wide spread reach, with SMEs accounting for a large portion of the organizations and employment across most sectors. Although SME leaders have many strengths both due to and in reaction to the smaller nature of their organizations, these same factors also lead to many of the obstacles that SME leaders face on a daily basis.

2.4.3 IPMA Views

The International Project Management Association sets out a global standard for the competences that individuals should have to work within project, portfolio, and program management (IPMA, 2015). This standard is accurately termed the Individual Competence Baseline (ICB). There have been numerous versions of the IPMA ICB with the most recent version (version 4.0) having come into effect in 2015 after three years of development (IPMA, 2015). Development of the standard occurred with the contributions from and consensus between 60 national member associations (Vukomanović, Young, & Huynink, 2016).

It is known that project management is a crucial aspect of project success, particularly for larger and more complex projects where having competent project managers and project management structures is essential for projects to succeed due to the complexity involved (Varajão & Cruz-Cunha, 2013). Project managers therefore need to have the competencies to navigate these intertwined factors in order to successfully manage the projects, portfolios, and programs that their organisation undertakes (IPMA, 2015). It is important to note that this focus on competencies is fairly rare in the world of standards, where much of the focus is on processes and procedures (Vukomanović et al., 2016). The focus that the IPMA ICB has on individual competence development, as well as the standard's specification of competencies needed for good performance in project management sets it apart from many of the other project management based standards that have been developed (Vukomanović et al., 2016).

The goal of the ICB standards the IPMA developed was simply to enrich and improve the competence of individuals within the fields of project, portfolio, and program management, through the development of an inventory of competencies that if used completely would result in the mastery of management in the domains of project, portfolio and program management (IPMA, 2015). As a competence-based standard, the IPMA ICB outlines a wide range of knowledge, skills, and abilities that are necessary for high-level performance (Vukomanović et al., 2016).

The document outlines six different groupings of audiences that the standard targets, with a list of potential uses associated with each of the varied audience members (IPMA, 2015). As Varajão & Cruz-Cunha (2013) note, one such use for the IPMA IBC is for the hiring of project managers. As the standard describes competencies that will be beneficial for the various project-oriented environments, hiring committees can use this information for screening

applicants looking to fill project-oriented management positions within the organisation (Varajão & Cruz-Cunha, 2013). Managers, whose roles are intertwined with that of leaders' role, are evidently a large portion of the audience that the IPMA is targeting for this particular standard. As such, leadership itself plays a role in the standard and how it can be utilized both by managers in a leadership role, and those in the organization who employ leadership without being in a management position.

In the current version of the standard, three groupings of competencies have been outlined and described. These broader Competency Elements (CEs) are People, which describes the interpersonal competencies required; Practice, which describes the technical competencies required; and Perspectives, which describes the contextual competencies to be navigated when dealing with the broader environment (IPMA, 2015). These three divisions are together in the called 'Eye of Competence', a concept that was developed in earlier versions of the ICB (Vukomanović et al., 2016). The purpose of the Eye of Competence is to provide different areas of focus for the various aspects of competence which then come together as a whole in order to create a balanced individual (IPMA, 2015).

Within the breakdown of competences into the three CEs (People, Practice, Perspective), there exist 29 specific competences (Vukomanović et al., 2016). These elements are then further broken down into key competence indicators, which differ between the three project-oriented environments, with a total of 134 indicators for project management, 124 indicators for program management, and 105 indicators for portfolio management (Vukomanović et al., 2016). As can be inferred from the incredible number of indicators and competence elements, the ICB baseline is a comprehensive inventory to help ensure successful project, portfolio, and program management (IPMA, 2015). The generic model that the IPMA lays out can be applied to all industries and sectors, and while all competencies will be applicable to any project undertaken, the importance of each competency will differ between projects and for different individuals (IPMA, 2015).

Competence can be achieved and viewed from different structural levels, those being the individual level, the team level, and the organisational level (IPMA, 2015). These three levels of competence development will overlap and intermix, as competence is a product of all three, with short fallings in one area impacting the overall competence level (IPMA, 2015). While all three levels are important for developing competences, the IPMA ICB focuses primarily on the individual competence perspective (IPMA, 2015). The standard outlines a number of

approaches that could be used to develop individual competences (IPMA, 2015). The five approaches described by the IPMA have been listed below, and the choice between their use and implementation will depend on individual and organisational preferences as well as what makes the most sense contextually (IPMA, 2015).

1. Self-development;
2. Peer-development;
3. Education and training;
4. Coaching and mentoring;
5. Simulation and gaming.

Almost all of the five approaches to competence development are aspects that can be applied to good leadership. A leader should be self-aware and have an ability to develop their own competencies, while they should also have the skillset to empower others to strengthen and improve their own abilities in the workplace. Leadership often involves an ability to educate and train the employees that are working for the project, while coaching and mentoring is quite directly about being a leader and empowering others to challenge themselves and become critical thinkers (IPMA, 2015).

The implementation of ICB within an organization requires backing from the upper management and people in leadership positions so that it can be applied overarchingly across an organization (IPMA, 2015). This is crucial as it reiterates the importance that leadership has for the development of leadership-driven projects and organizations. It is also important to note that leadership plays a direct role in some of the more specific competencies that the IPMA lays out in the ICB (IPMA, 2015). Three of the People competencies directly mention the term leadership (People 5, People 6, and People 7), while the 'People 5' competency is called 'Leadership' and describes the importance leadership has in project, portfolio, and programs in today's world (IPMA, 2015). Many more of the individual competencies mentioned and described by the IPMA's ICB4 are important aspects for good leadership, some more directly than others (IPMA, 2015). For each element any related competences are listed (IPMA, 2015). This is useful given that leadership is a competence element itself and therefore all elements related to it according to the IPMA can be easily identified for those looking to improve upon their leadership qualities.

The ICB4 has been developed and positioned by the IPMA to be the first global baseline on the market of its kind without being connected directly to IPMA certification systems and therefore useful to a variety of individuals (Vukomanović et al., 2016). Given its focus on competency measures and the personal performance aspects of management it is not at odds with process-based standards, instead acting as a complimentary standard to use in tandem with any processed-based one that might be in use (Vukomanović et al., 2016). An ability to work well with process-based standards is key for leadership development as it can be applied in conjunction with those standards that have been developed for leadership and management improvement. This focus on competencies is useful for those in management and leadership positions as it can aid individuals in developing their own competencies including those competencies that are either directly or indirectly linked to leadership.

2.4.4 PMI Views

The Project Management Competency Development (PMCD) Framework is a framework sponsored by the PMI and developed to provide individuals and organizations alike with guidance on assessment, planning and management of a project manager's professional development. The framework provides a definition of project manager competence and goes on to explain both the development and assessment of this competence. It provides an overview of the behaviours and skills an organization or individual would need to improve and develop competence in a project manager (Cartwright & Yinger, 2007).

This framework first outlines three dimensions of competence, those being knowledge, performance, and personal competences. The project management knowledge competence deals with what the project manager knows about project management. The project management performance competence deals with what the project manager is capable of accomplishing while applying their project management knowledge. And finally, the personal competence dimension deals with how the project manager behaves while performing the project, including things like their attitudes and personality. All three of these dimensions must be present for a project manager to be deemed fully competent (Cartwright & Yinger, 2007).

The PMCD framework goes into more specifics than simply outlining three broad competency dimensions. It is structured to include a further breakdown of units of competence, which each consist of a number of elements. These elements are broken down further into

performance criteria which have types of evidence associated with them. Furthermore, the PMCD framework acts as a useful knowledge base as it goes into detail about the units of competence in terms of linking each to one of the five process groups of a project. Those process groups are Initiating, Planning, Executing, Controlling, and Closing by PMI definition (Cartwright & Yinger, 2007).

The competence units are divided into two groups, the performance competences and the personal competences (PMI, 2017c). In this research, only the six personal competences that are related to the topic discussed will be mentioned. The personal competences along with their descriptions are listed below.

1. Communicating: Effectively exchanges timely, accurate, appropriate, and relevant information with stakeholders using suitable methods;
2. Leading: Guides, inspires, and motivates team members and other project stakeholders to manage and overcome issues to effectively achieve project objectives;
3. Managing: Effectively administers the project through deployment and use of human, financial, material, intellectual, and intangible resources;
4. Cognitive Ability: Applies an appropriate depth of perception, discernment, and judgment to effectively direct a project in a changing and evolving environment;
5. Effectiveness: Produces desired results by using appropriate resources, tools, and techniques in all project management activities;
6. Professionalism: Conforms to ethical behaviour governed by responsibility, respect, fairness, and honesty in the practice of project management.

2.5 Relationship between Leadership and Project Management in SMEs

Project-based organizations have become extremely common in today's societies. This is mainly due to the fact that they are much more flexible and well-equipped to overcome some of the barriers to innovation and organizational restructuring that traditionally organized companies face (Mueller, 2015). Project-based organizations are also better able to react in a timely manner to sophisticated customer demands. To accomplish these things however, it does mean that project teams within the organization need to be effective at knowledge sharing as well as practice cohesive interaction within the team and with project stakeholder

(Mueller, 2015). For this to occur, it is crucial to have project managers who are able to lead teams effectively and keep all members focused so that they can accomplish the desired project outcome for the customer.

Being a project manager and being a leader are two separate things, however, they are interconnected. Although the roles of a project manager and a project leader are very different, they are complementary and therefore the role of project leader is often incorporated into the position of the project manager (Roy et al., 2010). Just like for leadership, there is not a one-size-fits-all method to managing projects. How a project manager, either acting in the role of a leader or a manager, approaches the project with regards to the practices he employs will depend on the type of project, the project team members' relationship to each other and the manager, as well as the scope of the project and what it is trying to achieve (Roy et al., 2010). Although being a leader and being a manager are separate functions, they are often used as interchangeable terms. Thus, much of the research done on project leadership is focused to some extent on the different techniques employed by project managers.

There are a variety of management and leadership styles that a project manager can choose to employ when working on any specific project. The ability of a project manager to read a situation and decide what type of management style they wish to use is crucial to the project. The many different avenues they can take with regards to management and leading include everything from a more autocratic, hierarchical position to delegating more tasks and leadership roles to multiple individuals involved in the project, in order to foster a much more collaborative environment.

As is illustrated in Figure 5, there are many different roles that a manager can take with regards to leadership. These range from much more controlling and more autocratic manager styles, to more open and collaborative styles. The employment of each of these styles will depend on the project itself as well as the general atmosphere of an organization. A good manager will know which leadership style to employ given the situation.

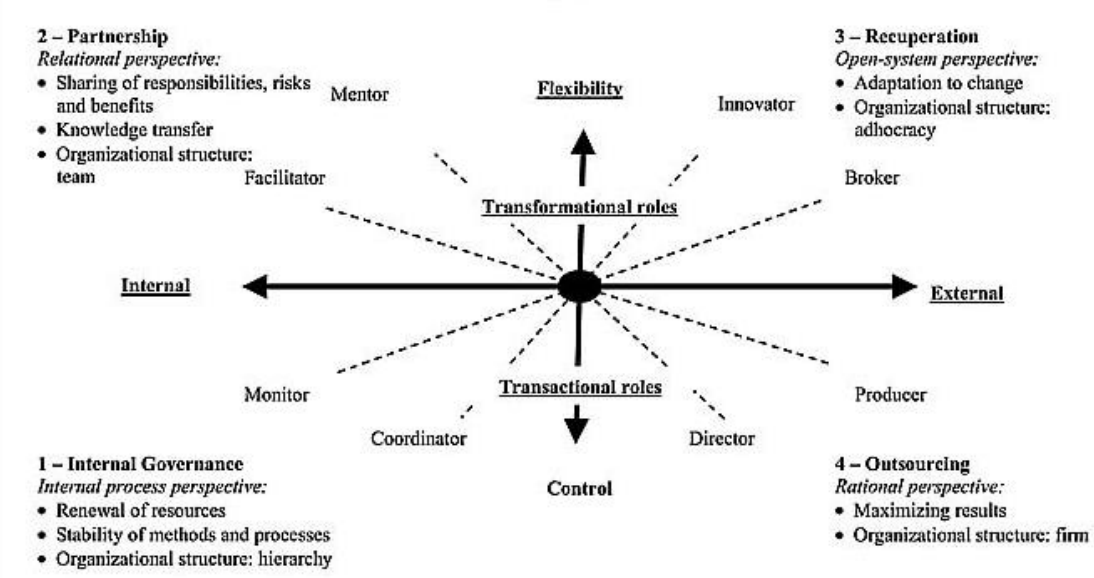

Figure 5: Leadership and Management Roles
(Roy et al., 2010)

One issue the project managers often face is that they are quite isolated from the rest of the organization. They are in an odd in-between with the project team employees and the managers who perform regular day-to-day manager duties. Especially in SMEs, this isolation from a peer group can be very apparent, given that they generally do not have the resources to employ an excess of project managers. SMEs generally also do not have the need to put in place a project management office where all of the project managers would have a chance to interact on a daily basis (Lee et al., 2015). Interacting with other project managers aids in the improvement of jobs skills, as well as increasing learned skills and innovation – all of which is crucial to improving projects and the leadership techniques used for those projects. However, since it is often the case that project managers within an organization are fairly isolated from one another, this ability to foster new skills and improve their ability to innovate is greatly decreased (Lee et al., 2015).

One way for managers to get around this issue of isolation is participating in what are known as communities of practice. These are groups where business professionals can learn and innovate with peers. A community of practice can be defined as “an informal group of people bound together by a common disciplinary background and similar work activities with the primary purpose of developing members’ capabilities by building and exchanging knowledge” (Lee et al., 2015, p. 41). Communities of practice can either occur within an organization, or be formed external to any organization, so that individuals from a variety of organizations can

come together. For many SME project managers these external communities of practice will offer them the most peer group interaction. This is because project managers from many organizations will be just as isolated as they are, seeking for individuals in similar situations to learn from and innovate with (Lee et al., 2015). As innovation is an integral part of leadership, these communities of practice are a useful tool to ensure that project managers are developing their leadership skills.

In a study done on knowledge sharing between project teams, the role of leadership within these teams was examined. It was found in most of the companies in the study that the responsibility for leadership was actually shared between top management, project team managers and the project team members. This means that although the management positions had a role in leadership, that role was also shared throughout the company hierarchy (Mueller, 2015). For some companies of course, the knowledge sharing stayed within the rigid confines of a typical business hierarchy, meaning that project leaders mainly shared insights with other project leaders, and team members shared mainly with team members. In this more rigid structure, leadership in the lower levels of the hierarchy was not frequently possible which allows for an increased leadership role from top-management overall and project leaders with respect to their specific projects.

In the vast majority of organizations interviewed however, the knowledge sharing was a lot more fluid allowing for team members to take part in the leadership of different aspects of the project. In these organizations, leadership, while still important for the upper management and project leaders, is less dependent on that typical hierarchal business structure. Since the leadership role is shared more openly, it is slightly less important as a portion of project management than it would be in a business which conforms to the traditional hierarchal structure.

Leadership and management have always been thought of as fairly synonymous and although they are two separate things, they do overlap quite a bit. Leadership qualities are sought after when it comes to being in any management position, but particularly for project management where there is such a high chance of projects failing or being challenged. In SMEs, projects are generally smaller and there are often more of them due to the more innovative nature of SMEs in general. This means that the performance metrics of SMEs, with regards to project

management, should be seriously considered and researched for individual organizations as well as trends across the sector as a whole.

How big of a role leadership will play in project management, as well as what style and approach of leadership should be employed, will differ from organization to organization and from project to project. As such, it is important for organizations to do their research on leadership and observe what works best for their organization so that their project management techniques are as effective as possible.

2.6 Impact of Leadership on Project Success

In a paper written on project leadership in the IT sector, it was noted that many of the studies done on this topic were in fact focused on the roles and behaviors of the project managers. It was found that in the case of successful projects, the managers were able to adopt leadership profiles that adapted to the specific project they were working on (Roy et al., 2010).

The ability for project managers to be leaders as well as perform other management duties is crucial to the success of projects. They need to be able to read a situation and decide what style of management and what type of leadership role will work best to motivate and inspire staff to get the project done on time, on budget and with high quality results. Leaders should be able to give credit where it is due, nurture the creativity of the staff members involved in the project, as well as support them in taking calculated risks (Chittoor, 2012). Doing so, not only makes a good leader, but also turns out projects that succeed.

Projects generally change and adapt over time as the vision and the deliverable result merge. This requires leaders who are also able to adapt, both in their leading style and in their approach to the changing project (Chittoor, 2012). Leaders who are not able to adapt and grow with the project will ultimately develop projects which have failed on one or more of the measures previously discussed. Furthermore, project managers should be able to use their own ability to anticipate and adapt to change in a project, to aid their team members in coping with changing projects (Chittoor, 2012).

As has been mentioned previously by the Standish Group's research and metrics, leadership in multiple forms plays a large role in the success or failure of a project. They deem the foremost important metric of a project to be the executive management support, going as far

as to say that the “executive sponsor is ultimately responsible for the success and failure of the project” (The Standish Group, 2013, p. 3). The executive sponsor is expected to have many of the qualities and skills that are required of a leader as well. These include the ability to motivate employees, commitment to the project and to the team members, ability to communicate the goal and/or vision of the project, ability to develop and execute a plan, and the skills to negotiate between team members, external stakeholders, and executive sponsors on all matters of the project.

Furthermore, the Standish Group’s fifth criteria for successful projects is also a leadership driven metric, this time focusing on the project manager expertise. When discussing the role of project managers, it is quite literally in their job description to take the natural progression of a project to its successful resolution. The project managers are expected to be leaders and to exhibit skills common to both successful leaders and managers. These skills include, but are not limited to: planning and executing the plan, showing proficiency in good judgement and diplomacy, recognizing the potential and strengths of team members and motivating them, as well as adapting to constant change through communication with stakeholders (The Standish Group, 2013). As such, this metric is another example of the impact leadership has on project success.

The sixth criteria laid out by The Standish Group (2013) for successful projects is the application of the Agile Process. The Agile Process is a conceptual framework for undertaking projects, particularly projects in the IT sector. It directly addresses the first five criteria laid out by The Standish Group, including the two aforementioned ones which focus on leadership and management. This is another criterion which reinforces the importance of leadership when it comes to project success.

Finally, the eighth criterion that The Standish Group discusses for the success of smaller projects is emotional maturity. Emotional maturity being an ability to perceive, assess, manage, and direct the emotions and actions of the individuals involved in the project (The Standish Group, 2013). This is the same as emotional intelligence which is defined as “[the] ability to perceive, to assimilate, to understand, and to manage emotions” (Gallagher et al., 2015, p. 15). In research done on leadership, emotional intelligence - or emotional maturity - has been found to be positively correlated with the emergence of leadership qualities and the effectiveness of leadership (Gallagher et al., 2015). Emotionally intelligent leaders are able to

improve trust and cooperation between project team members (Gallagher et al., 2015) which is an extremely important part of being a good leader. Emotional maturity is therefore yet another criterion expressed by The Standish Group (2013) in their success factors for projects which ties leadership into project success.

In total, these four criteria account for 47 percent of the total points that were awarded to the ten criteria that The Standish Group (2013) outlined as the most important factors for achieving successful projects. That is nearly half of a project's outcome relying directly or indirectly on leadership as a factor according to the Standish Group's metrics (The Standish Group, 2013). Of that 47 percent, 32 percent can be accounted for by the first and fifth factors, both of which focus more directly on the leadership aspect rather than indirectly focusing on leadership through its integration into the success metrics. Regardless, The Standish Group's list of success criteria and the breakdown of points awarded to each section show the merit of having meaningful and functional leadership when it comes to the project environment. The role leadership plays is therefore quite significant, with the Standish Group metrics leading one to think that without it, projects have nearly fifty percent less of a chance at being completed successfully.

As has been shown by multiple studies and papers, leadership is a key factor with regards to the successful execution of projects. Without leadership, projects would not have nearly as much structure or direction and would often get abandoned halfway through or would not deliver the necessary metrics. Projects would end up reaching their conclusion without ever having a focus much more often, leading to a decrease in overall project success. This is a reality for projects across all industries and throughout all departments in companies. Regardless of what the project is supposed to accomplish it is important for it to have a strong leadership force keeping the team on task and motivated to achieve a successful end result. The manufacturing industry is no different, requiring leadership for its varied projects just as much as any other industry.

2.7 Manufacturing Industry

The North American Industry Classification System (NAICS) explains in detail what comprises the manufacturing sector. On Statistic Canada's webpage devoted to NAICS, the manufacturing sector is described as "[comprising of] establishments primarily engaged in the

chemical, mechanical or physical transformation of materials or substances into new products. These products may be finished, in the sense that they are ready to be used or consumed, or semi-finished, in the sense of becoming a raw material for an establishment to use in further manufacturing" (Statistics Canada, 2016). Put more simply, the manufacturing industry is an industry involved in creating new products through a variety of means and at varied stages of being a finished product.

The manufacturing industry has long played an important role in Canada and around the world, accounting for a variety of factories producing innumerable different goods and employing a large portion of the population. As labour has become cheaper overseas, due in part to the decrease in transportation costs, many manufacturing firms have moved out of western countries. This being said, many factories and firms do still reside in western countries such as Canada, still playing a role in their economies.

Some provinces have developed long-term work-force strategies to ensure that the manufacturing that is still occurring continues to supply jobs and money to the province (Government of Alberta - Ministry of Labour, 2007). In Albert alone, manufacturing is the 4th largest industry in terms of GDP and the fifth largest industry in terms of employment (Government of Alberta - Ministry of Labour, 2007). This however, is not the case for many provinces across the country.

In Ontario, manufacturing accounted for about 12 percent of the Province's GDP in 2013, with only health and education, and real estate being more influential to the economy. This means it does also have a fairly large impact on the economy in Ontario, similar to the situation in Alberta and with many of the same obstacles that face Alberta's variety of manufacturing firms (Davis, 2017). Figure 6, Statistics Canada data, shows the breakdown of all of the Ontario Industries based on their nominal GDP so a more complete image can be formed.

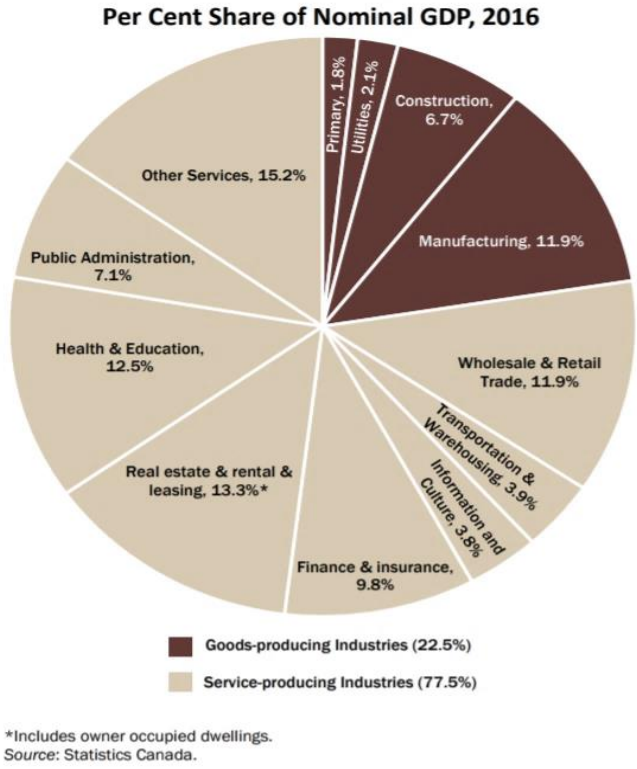

Figure 6: Structure of the Ontario Economy
(Ontario Ministry of Finance, 2017)

Since the manufacturing industry is so broad, it encompasses a number of subsectors which are considered both a part of the manufacturing industry as well as industries unto themselves. Some of these subsectors include the chemicals and petrochemicals industry, the industrial machinery and equipment industry, and the food and beverage manufacturing industry, just to name a few (Government of Alberta - Ministry of Labour, 2007).

These subsectors face many different issues, from disease in crops and animals, to depletion of natural mineral reserves. Different issues will affect each sub sector and alter their prominence in a province or country in terms of a supply for work and money. These sub-industry specific issues are not the only issues that face the manufacturing industry.

Most subsectors are faced with issues that include the attraction of skilled workers, maintaining productivity levels, recruiting and retaining production workers, and the health and safety risks that many jobs in the manufacturing sector pose (Government of Alberta - Ministry of Labour, 2007). On top of these issues, much of the manufacturing occurring in Alberta, as well as elsewhere across Canada, is faced with the problems that present themselves to SMEs. This is due to the fact that the vast majority of the manufacturing

industry is composed of firms with less than 500 employees, effectively making them a mixture of small and medium sized companies (Government of Alberta - Ministry of Labour, 2007).

The 'Natural Resources Canada' website provides one breakdown of the different subsectors of the manufacturing industry to show the percentage of energy use in each sector across Canada as a whole. Although values will be skewed significantly by the amount of energy used for processes specific to each sector, it does provide some pertinent information about the impact of each sub-industry and to some extent their size as well (Giroux, 2008).

Figure 7 provides a visual breakdown of this energy use. Not all subsectors are fully represented as many had too small of an impact to place into the pie chart. This is also what has occurred for Figure 6 for the sectors of the economy which had too small an impact to be accounted for. These smaller sectors and subsectors are accounted for under the 'Other' category present in both figures.

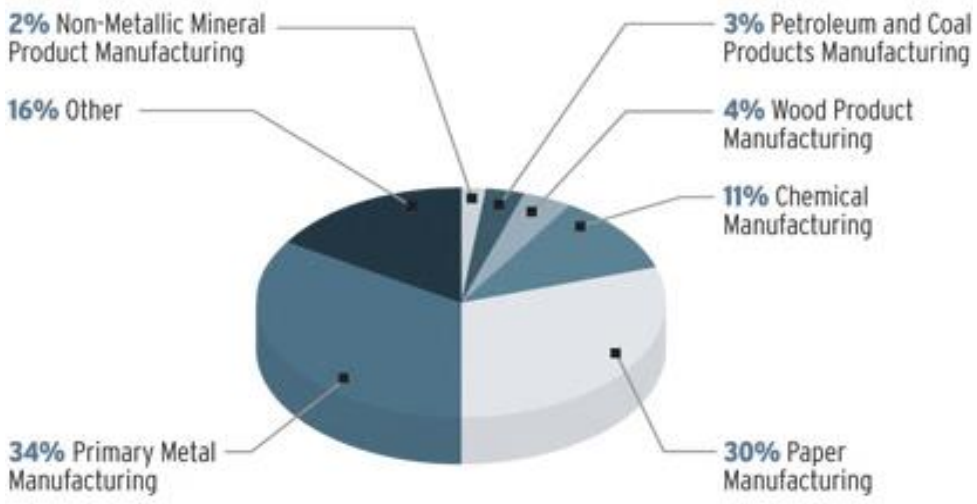

Figure 7: Share of Energy Use in the Manufacturing Industry (2005)
(Giroux, 2008)

In 2001, 15.21 percent of total salaried employment in Canada was in the manufacturing industry (Behrens and Bougna, 2015). By 2005 employment in manufacturing had gone down to 13.19 percent and by 2009 that number had dropped still to 10.11 percent (Behrens and Bougna, 2015). This downwards trend in manufacturing, or 'de-industrialisation', is a common trend across most developed countries. It is not limited to just jobs either, it is also affecting the number of plants, which has decreased significantly in the same time frame (Behrens and

Bougna, 2015). This trend of de-industrialisation in Canada is mostly due to the globalisation trend sweeping the world which has caused outsourcing of labour, especially in the manufacturing sector, to increase productivity (Chongvilaivan & Hur, 2011).

Interestingly enough, one view as to why such a surge in outsourcing has occurred accounts much of the trend to decline in transaction costs that has been caused by the intensified use of IT (Chongvilaivan & Hur, 2011). The very services and technological leaps that have helped the manufacturing industry so profusely seem to also be part of the reason that local manufacturing companies, operating out of western countries such as Canada, are losing so much business to outsourcing.

This downward trend in the manufacturing industry makes it even more important for Canadian manufacturers to innovate new technologies and ways to stay competitive in the marketplace. As projects play a key role in the innovation, design, and implementation processes of new technologies, they will become increasingly important for the manufacturing industry in the coming years. Projects in manufacturing should reflect this, and the ability of their project managers to lead effectively and efficiently will be crucial in determining not only whether individual projects succeed, but often whether the company will be able to stay competitive enough to survive in the ever-changing globalised market of manufacturing.

If companies are unable to run successful projects with leaders who are inspiring and motivating forces for their employees, the chances of those companies staying alive is greatly diminished. Thus, the link between project management and leadership to project success in the manufacturing industry is an important subject for proposed projects. This is especially true for projects in the IT sector, as the IT department has become a crucial department for manufacturing companies with regards to innovation, improving processes, and decreasing costs.

2.8 Summary

IT projects in the manufacturing sector require different tactics in terms of project management and leadership than one might be required to use in other types of projects. There are a multitude of leadership techniques that may be employed in different scenarios and it is up to the project manager to decide which techniques will work best with the specific project, with the project team members, and the organization’s overall dynamic. As project

success is the ultimate goal, it is crucial for project managers and project teams to work together along with all of the applicable stakeholders to determine which criteria are necessary for the project to succeed.

In the manufacturing sector, especially in Western countries such as Canada, it is crucial for project managers to lead their team so as to accomplish the set goal. By ensuring that they have a goal, a process, and a leader who is willing to work with team members to develop and amend their goal as needed, manufacturing companies are at a good starting point for projects. Doing so will assure that they can continue to work in their industry while maintaining the competitive edge necessary for keeping their company alive in the 21st century's globalised and highly competitive world. This is even more important for manufacturing companies classified as SMEs where any edge they can get will help them immensely against larger Canadian competitors and overseas competitors.

In the Canadian manufacturing industry, the vast majority of firms are considered SMEs and many of their projects focus on IT developments. The Standish Group focuses a lot of their research on IT and software development as well as developing that list of criteria specifically for smaller companies whose needs differ from the large mega-corporations that most research is conducted for (The Standish Group, 2013). As such, The Standish Group (2013) factors of success revamped for small companies will be an incredibly useful tool to improve project processes and success rates.

One key way that project leaders and firms can ensure a continuous improvement upon project processes and delivery is to keep records of past projects. Leadership methods, the roles of each of the team members, plans drawn up, any changes that occurred throughout the project, and an array of other factors should be recorded for future reference. By taking this step, firms are preparing themselves to learn from past mistakes and improve processes. This will give them an increased chance for their future projects to succeed.

Many of these criteria focus on the role of leadership towards project success and it will be important for project leaders to figure out which leadership methods and qualities will be most useful for their team and their work environment. In smaller organizations, it is often more effective to take a more inclusive and coordinator-like approach to leadership rather than an authoritarian approach. However, this may not be the best solution for every project. It will ultimately fall upon the shoulders of the leaders in the organization and the leaders of

the project in question to take any information they have from past projects executed by the firm, as well as from similar projects executed by other firms. Research done pertaining to projects in the manufacturing industry, with regards to SMEs, as well as IT projects – such as the reports written by The Standish Group – will serve as further support for structuring leadership in projects. By doing so, they can ensure that every project they undertake has the highest chance possible of succeeding.

3. RELATED WORK

This chapter is focusing on the work done by Ralf Müller which is considered to be similar to this research work. In addition, it will highlight what other scholars views on Müller's work. The similarities between this research and his research will be discussed, as well as the limitations and gaps, the methodologies used for data gathering, and how the data is analysised. At the end of this chapter, a conclusion and a comparison between this reasearch and Müller's research will be presented.

3.1 Similarities

Ralf Müller has written an extensive quantity of literature, as well as performed research on various aspects of project management. The vast majority of his research has been focused on linking project management leadership and project success. While the role of leadership is one of the main themes linking his research, he has approached the issue from a variety of different angles. Of course, his work has also crossed into other aspects of project management, and both their interaction with leadership as well as project success.

In terms of leadership and project success, some of Ralf Müller work has been in actively researching the role that leadership plays in project management and how this differs between various projects (Müller & Turner, 2005, 2007a). Other work he has undertaken looks more at examining specific leadership competency profiles in successful project managers and if they differ in varying types of projects (Müller & Turner, 2010). Leadership competencies appear in much of his research, in the context of hierarchal constructs, and as how they specifically contribute to the success of projects in various industries (Tabassi et al., 2016; Turner & Müller, 2006). Müller has also looked at leadership competencies as the dependent variable in several studies, assessing how they are impacted by the complexity of projects (Müller, Geraldi, & Turner, 2012). He has delved into project manager methodology changes and how these affect the success of projects, as well as what role project governance plays on this relationship (Joslin & Müller, 2015). Finally, with respect to leadership, he has done research on the connection between teamwork, leadership style and project success (Yang, Huang, & Wu, 2011). Much of his work looks into the differences that exist with regards to leadership when projects are divided by industry, project type and size, and/or a variety of

other criteria (Müller et al., 2012; Müller & Turner, 2005, 2007a, 2007b, 2010; Turner & Müller, 2006; Yang et al., 2011).

While the majority of Ralf Müller work researches, in some form, the connection of leadership to project success, he has also studied other aspects of projects and project management. He has examined the impact of relational norms, organization structure, and project risk on the choices managers take with respect to many aspects of their businesses (primarily IT and Business to Business (B2B) decisions). In addition, he has performed research on project and portfolio management jointly, studying the absorptive, innovative, and adaptive capabilities in early project phases and how they affect project and portfolio management (Biedenbach & Müller, 2012). No matter which aspect of project management Müller's work has focused on, it has had significant contributions to the existing literature.

While this all represents a more condensed and summarised version of Ralf Müller research initiatives, Table 7 has more in-depth and separated descriptions of the research he and his colleagues were performing in all of the studies being discussed. The objective being to make it clear what each of the individual research papers, as well as Müller's book, were specifically studying.

Table 7: Müller's Research Projects

Publication Name and Citation	**Description of Research Topic**
Absorptive, Innovative and Adaptive Capabilities and Their Impact on Project and Project Portfolio Performance (Biedenbach & Müller, 2012)	A study on capabilities within early project phases and how they affect project portfolio performance in biotechnology and pharmaceutical Research and Development (R&D) organizations.
Matching the Project Manager's Leadership Style to Project Type (Müller & Turner, 2007a)	Research on the leadership styles of project managers and how they influence project success as well as what leadership styles are appropriate for different types of projects.
Leadership Competency Profiles of Successful Project Managers (Müller & Turner, 2010)	A study examining the leadership competency profiles of successful project managers in a variety of different project types. These leadership competency profiles include goal oriented, involving, and engaging leadership styles.

Publication Name and Citation	Description of Research Topic
Relationships between Leadership and Success in Different Types of Project Complexities (Müller et al., 2012)	A study on the effect of project complexity on the relationship between leadership competencies and project success to allow for better identification of suitable project managers for projects of different levels of complexity.
Relationships between a PMM and Project Success in Different Project Governance Contexts (Joslin & Müller, 2015)	A study on the relationship between the use of a project manager methodology and project success, as well as the impact of the project governance context on the aforementioned relationship.
The Influence of Project Managers on Project Success Criteria and Project Success by Type of Project (Müller & Turner, 2007b)	A study assessing the importance project managers attach to project success criteria and the associated rates of project success for different types of projects, industries and the traits of project managers.
The Project Manager's Leadership Style as a Success Factor on Projects: A Literature Review (Müller & Turner, 2005)	A literature review commissioned by the PMI on whether a project manager's leadership style is a success factor in projects, and whether this impact is different for different types of projects.
Determinants for External Communications of IT Project Managers (Müller, 2003)	A study on the impact of relational norms, organization structure and project risk on project managers' choices in communications media, as well as, frequency and contents in IT and B2B decisions.
Leadership Competences of Sustainable Construction Project Managers (Tabassi et al., 2016)	A study done on leadership competencies and transformational leadership qualities as hierarchal, reflective constructs (integrating 10 associated components), as well as, the leadership of project managers as second-order reflective constructs that experience a direct impact on the success criteria for sustainable buildings.
The Association among Project Manager's Leadership Style, Teamwork and Project Success (Yang et al., 2011)	A study to examine the impact of teamwork on project performance as well as to investigate project managers' leadership style, teamwork and project success moderated by variables such as industry sector, cost, initial site, complexity, and team size.

Publication Name and Citation	Description of Research Topic
Choosing Appropriate Project Managers: Matching their Leadership Style to the Type of Project (Turner & Müller, 2006)	Research project on the 3rd dimension of competence and personal characteristics (i.e. leadership style) which set out to show that project managers' competencies (particularly leadership) do contribute to project success and that different competence profiles (leadership style) are required for different types of projects. It also aimed to answer two research questions: Does a project manager's competence (including leadership style) influence project success? Are different competence profiles appropriate for different types of projects?

3.2 Limitation and Gaps

Overall, in his work, Ralf Müller shone a light on some of the gaps that exist in the present literature surrounding project management, especially with regards to the link between a project manager's leadership capabilities and the success of projects. He has noted that there is a startling lack of research on this topic (Müller & Turner, 2007a). While the importance of leadership has been emphasized in general management literature, it has oddly been absent in its mention as an important factor in the project management literature (Müller & Turner, 2005, 2007a). He concludes that not only is there a gap in the literature but there are also some widely held beliefs, in the project management community, about leadership that may be a contributing factor to the lack of research (Biedenbach & Müller, 2012).

The first belief is that a project manager's leadership style and competency make no real difference towards whether or not a project will succeed (Biedenbach & Müller, 2012). The second belief adds on to this as it holds that anyone who can learn to use and properly apply project management tools and techniques will be able to manage any type of project in any industry (Biedenbach & Müller, 2012). While literature on leadership has been growing, it is important to note that it is a complex phenomenon, and while observed frequently, it is not yet understood well enough. Regardless of the specific gaps seen in project management literature with respect to the role of leadership, it would appear that it is not yet well enough understood in any context. Adding to the literature in order to start closing this more general leadership-role knowledge gap presents another way in which Müller's research is contributing to our understanding of project management (Tabassi et al., 2016).

More recently, it has been realised that the appropriate tools, techniques, and methodologies will differ across both project types and industries, therefore it follows that this differentiation should also be applicable for the styles of leadership that are employed by project managers (Biedenbach & Müller, 2012). Leadership is not the only gap regarding the role of differentiation not being addressed, however, the literature has also neglected to address how success criteria fit into the differentiation of projects (Müller & Turner, 2007b). Namely that different success factors should be identified depending on the project (Müller & Turner, 2007b). This is because projects of different types, in different industries, and with different sponsors, require different success criteria, and so choosing the appropriate success factors will give the project a better chance at actually achieving those success criteria (Müller & Turner, 2007b).

Two more gaps in the literature that Ralf Müller has addressed through his research are the way in which leadership competencies have been approached and measured in the past, as well as, the context of projects and how this impacts leadership and project success (Müller et al., 2012). The intent of the study was directed at filling these knowledge gaps to allow for better identification of project managers, depending on the type and complexity of projects, in order to improve the success rates and results of those projects (Müller et al., 2012). In addition to the first two gaps mentioned, there is also a knowledge gap on the usefulness of a PMM (Joslin & Müller, 2015). This particular knowledge gap is hindered by two factors; the extent of its impact on project success is unclear due to the fact that a large number of projects still fail, and there is still a lack in the way of accurately measuring and quantifying any impacts that may exist (Joslin & Müller, 2015). The final gap regarding project management leadership that Ralf Müller acknowledges and subsequently addresses through his work is the link that exists between leadership and teamwork (Yang et al., 2011). While many practices have been studied, performed, and dropped by companies, there is a significant lack of empirical research on the topic which has made it difficult for anyone looking to employ a 'best practice' to achieve results backed by data (Yang et al., 2011).

Much of the research Ralf Müller and his colleagues have performed is centred on the knowledge gaps relating more directly to leadership in a project management sense. As briefly described earlier, these are not the only research gaps his work addresses. While still highly related to leadership, one of the areas Müller has performed work on is the role that

communication management plays in projects, specifically in IT projects (Müller, 2003). Communication is of course an inter-related component to leadership, however, leadership in this particular study was not the primary focus (Müller, 2003). Unlike leadership itself, communication is more commonly regarded as an important driver of success in the body of project management literature (Müller, 2003). As such, there was more existing literature to back up the idea that communication is important, and thus this was not the focus of the study performed by Müller (Müller, 2003). Instead his study looked to address a gap in knowledge that was more pointed and specific; namely how communication choices by IT project managers are impacted by factors frequently established as determinants for communication practices (Müller, 2003).

Finally, Müller's research also extends to project and portfolio management in a broader sense, but with the specific lens of R&D in the pharmaceutical and biotechnology sector (Biedenbach & Müller, 2012). In this case, he is drawing off of previous literature which emphasizes the use of dynamic capabilities that organizations (in general) use to gain a competitive advantage (Biedenbach & Müller, 2012). While this forms a base of literature off which to start, the knowledge gap being addressed in this particular study exists because the three components of dynamic capabilities – those being absorptive, innovative, and adaptive capabilities – which are, to the best of Müller's knowledge, not specifically addressed in prior literature in a project or portfolio management context either in building, maintaining, or utilizing them (Biedenbach & Müller, 2012). Although project management research has been seen to include dynamic capabilities, this has been in a much more general sense, once again allowing for a knowledge gap which needs to be filled for a more complete picture (Biedenbach & Müller, 2012). There has been a lack of research on the effect that these three capabilities have on both project and portfolio performance (Biedenbach & Müller, 2012). Müller's intent through this particular study was to close this gap, specifically with regards to the performance of projects and portfolios within R&D sectors of pharmaceutical and biotechnology organizations (Biedenbach & Müller, 2012).

The general lack of knowledge surrounding all of the aforementioned topics has led to knowledge and research gaps that need to be addressed. Müller has started to fill these gaps through his research in countless areas of project management and leadership. As is evidenced by the lack of empirical research on the topics, this is perhaps one of the areas that

should be focused on to gain a more in-depth understanding as well as data to back up (or prove wrong) the beliefs and claims of project managers and those within the project management industry. As will be evidenced through Müller's work, he has done a good job of filling these gaps using empirical data and primary research studies to draw new pools of data on which to work.

3.3 Methodologies for Data Gathering

Throughout Müller's research works, he has employed a variety of methodologies through which to gather both primary and secondary data. These methodologies, found within numerous research papers written both unaided, with collaborators, and on behalf of organizations, will be discussed within this section.

Starting broadly, Müller tends to utilize studies of groups of individuals in order to gain primary data from which to draw conclusions on his work (Biedenbach & Müller, 2012; Joslin & Müller, 2015; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007a, 2007b, 2010; Tabassi et al., 2016; Turner & Müller, 2006; Yang et al., 2011). This was done in order to gain information first-hand from people who were directly being impacted by the concepts being studied. In doing so, some of the knowledge gaps described in the section above could be addressed. He also employed literature reviews and document analysis throughout his work in order to gain background knowledge on previously performed research as well as build a case for the need for his current research (Joslin & Müller, 2015; Müller, 2003; Müller & Turner, 2005, 2007b, 2010; Turner & Müller, 2006; Yang et al., 2011).

In terms of gathering primary data, there were a couple of techniques Müller employed to perform these studies. The first, which was present in the vast majority of the assessed studies, was some form of survey (Biedenbach & Müller, 2012; Joslin & Müller, 2015; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007a, 2007b, 2010; Tabassi et al., 2016; Turner & Müller, 2006; Yang et al., 2011). The second was the use of interviews, which, while also used in a number of his studies, were not quite as wide-spread (Biedenbach & Müller, 2012; Müller & Turner, 2007a; Turner & Müller, 2006; Yang et al., 2011). On the other hand, secondary data was gathered primarily through document analysis and literature reviews, meaning literature on the topics of interest written prior to his intended study were reviewed, key ideas combined, and research and knowledge gaps identified.

Referring back to the development and use of primary data, the surveys - or questionnaires - varied depending on what was being studied and the intent of the study. Going off of what was most frequently utilized, Müller's primary mode of delivering surveys was through email, where an introduction to the purpose of the survey as well as a link to the survey was emailed to professionals of the intended survey audience. There was only one case where the surveys were not web-based, and these were instead hand-delivered to study participants and collected afterwards by research officers (Tabassi et al., 2016). This method was more labour intensive, and the study surveyed a lesser number of individuals that the majority of his web-based surveys.

The introductory emails were often distributed through a combination of project management networks such as the PMI, to Masters students at various Universities, and through the researchers' (including Müller's) personal networks (Biedenbach & Müller, 2012; Joslin & Müller, 2015; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007a, 2007b, 2010; Turner & Müller, 2006; Yang et al., 2011). Participants were also often asked to forward the email to other professionals in order to expand the response pool (Turner & Müller, 2006). This, referred to as a snowball approach to sampling, is a form of convenience sampling often utilized when large numbers of a desired population need to be reached (Müller, 2003; Müller & Turner, 2007b; Turner & Müller, 2006). While this was the case with many of the surveys, some with more specific desires for a representative sample of an industry chose to more carefully select participants so there was geographic and sub-sector diversity with little to no overlap of an industry (Biedenbach & Müller, 2012; Tabassi et al., 2016; Yang et al., 2011).

These questionnaires were often piloted, in other words a pre-test questionnaire was distributed to a small group of individuals (Joslin & Müller, 2015; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007b; Turner & Müller, 2006). This pre-test of questions was performed so that any issues, either with the wording of questions, the clarity of questions, or missing information could be identified and the questions adjusted so that those issues would not occur during the study itself (Müller, 2003). Testing the questionnaire was not the only technique Müller and his colleagues used to ensure that the study would not run into any issues with the questionnaires.

In the four studies which employed the use of interviews, they were used as implements to not only gain more qualitative in-depth information, but also as a pre-curser towards

formulating appropriate and pointed questions within the questionnaire (Biedenbach & Müller, 2012; Müller & Turner, 2007a). In Biedenbach and Müller research paper (2012), the approach was to perform the interviews first (three rounds, with 18 interviews all lasting between 45 and 90 minutes) so that an exploratory case study could be conducted. While this mixed method approach to the research study was more labour-intensive than simply handing out a pre-designed survey to a group of professionals and asking for their feedback, it did allow for a more informative approach to developing the survey questions. In doing so, they would be able to avoid asking questions with little relevance, or missing questions that would have given them key information. Interviews performed were semi-structured (Biedenbach & Müller, 2012; Müller & Turner, 2007a; Turner & Müller, 2006), meaning that questions were open-ended ones that were pulled from an interview guide with other questions added for context, deeper understanding, and clarity (Biedenbach & Müller, 2012). A variation on this was the use of focus-groups of individuals reviewing the questions and providing feedback in order to gain a similar result (Müller, 2003).

The other strategy they used, to ensure that the questions they were asking would be useful and clear, was to take questions from previous studies done on similar topics (Biedenbach & Müller, 2012; Müller & Turner, 2010). A variation on this was also performed, by re-using variables from previous studies and adding them into the questionnaires they were developing (Joslin & Müller, 2015; Yang et al., 2011). Both of these strategies are useful techniques as they can review previous studies, identify what steps they took to ensure that their questions were properly developed and tested, and they have the results from those studies as well as any information the researchers identified in hind-sight about issues that the questions ran into. In this sense, it is as if they have performed a pilot test with the questions without having to go through the process of developing and testing the questions themselves.

The surveys were generally a combination of various questions, often with multiple sections addressing the topics of interest from a variety of perspectives. Demographic information was also a portion in each of the questionnaires so that background information about the participants could be gathered (Turner & Müller, 2006). For example, in one study, demographic information revealed that the majority of the respondents were males from North America, working in the private sector, who were certified project managers (Müller et

al., 2012). Demographic information was also used to weed out any participants that did not fit the demographic of individuals Müller and his colleagues were looking to study with their research. In some studies, a pointed question, either in the initial email or in the survey itself, was intended as a flag to identify those participants whose questionnaires would be useable and those whose would not be useable (Joslin & Müller, 2015). As well, in some studies, particular respondent questionnaires were omitted from analysis due to a lack of information, with some questions or entire sections of questions having not been answered before the surveys were sent back (Biedenbach & Müller, 2012).

Bias was also an important factor that Müller addressed in his research. As bias can taint the data in a study and null the results, or at least make them less relevant, it is important for researchers to keep biases in mind and actively minimise their presence. One way in which Müller and his colleagues did this was through the use of recommendations of Podsakoff and Organ (1986) to minimise methods bias, for example through confirming anonymity of participants, using a variety of layouts and scales, and randomising the questions (Joslin & Müller, 2015). They made sure that the sample size was large enough to be representative of the target population as well, to reduce bias (Biedenbach & Müller, 2012). Finally, they used statistical methodologies post-survey completion to test whether there were differences between those groups who responded earlier or later (often before or after a reminder email) (Müller et al., 2012; Turner & Müller, 2006). If a difference in population had been found, this may have indicated that there was also a statistically significant difference between those who responded and those who did not respond, which would mean that there was a non-response bias in their data. No such difference was discovered (Müller et al., 2012).

A final way in which bias was reduced was through the dissemination of surveys on a world-wide basis (Müller & Turner, 2010; Turner & Müller, 2006). While this was not the case for all of the surveys conducted, as some were specifically looking at one country or region (Tabassi et al., 2016), the spread of respondents was generally across multiple continents and countries, simply due to the dissemination method of the surveys (Joslin & Müller, 2015; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007b, 2010; Yang et al., 2011). While this may have acted to minimise any bias that might have occurred from a questionnaire that only surveyed respondents from one cultural lens, it also served another purpose. Due to the demographic questions asked during surveys, the researchers were also able to gauge the

percentage of participants who came from different geographic areas. In this way, if a large portion of respondents did happen to come from one particular country, then this potential bias could be noted in the study.

The final component of many of these studies was a literature review. As mentioned previously, one of the studies performed by Müller was solely a literature review, meaning there was no primary data gathered or analyzed for the research (Müller & Turner, 2005). Literature reviews were also used in many of his other studies as well, mainly as a way to ensure that a research gap was in fact present in the current literature (Müller & Turner, 2007b; Turner & Müller, 2006). This is important because without performing an in-depth literature review, a prior study addressing the exact research assumed to be a gap may be missed and the funds, as well as the researchers' time, might have been wasted on a subject that has already been addressed. Often these literature reviews were also used to develop the hypotheses of the studies being performed (Joslin & Müller, 2015; Müller, 2003; Müller & Turner, 2007b, 2010; Turner & Müller, 2006; Yang et al., 2011). In performing a literature review, Müller was able to build off of the information currently available on the topics he was researching to make educated hypotheses for his studies.

Using a mix of both primary and secondary data and the methodologies that go along with these is important for a study if its intent is to add on relevant and useful information to the existing bank of knowledge on a topic. While nearly all of the studies performed by Müller (excluding Müller and Turner (2005)) had the intent of addressing knowledge gaps through gathering new information, it was important that Müller first reviewed the relevant literature to ensure that the gap he was attempting to address was in fact a gap. By performing interviews, surveys, and questionnaires, as well as manipulating the raw data to gain useful insights from that primary data, he was contributing to the existing literature and starting to fill some of the knowledge and research gaps.

3.4 Data Analysis

The primary data collected throughout the studies Müller and his colleagues performed was analyzed using a variety of statistical methodologies and tools. The tools employed differed depending on the type of information needed, the questions asked, and the data obtained from them, as well as the type of primary data gathering method that was used.

Starting with the interviews, the data gathered was primarily qualitative, as the open-ended questions did not generally have numbers attached to them that could be easily manipulated using statistics to gather insights (Biedenbach & Müller, 2012; Turner & Müller, 2006). Instead, the answers were recorded (with prior permission), transcribed, and in some cases, notes were taken during the interviews. All of this raw data was coded so that the information could be analyzed in conjunction with the information from the secondary data gleaned from literature reviews (Biedenbach & Müller, 2012). The secondary data and the data from interviews was analyzed using template analysis, and elements that emerged were then coded (Biedenbach & Müller, 2012).

In terms of the questionnaire information, this was more often quantitative information or qualitative information that could easily be converted into number values so that it could be used in statistical analyzes (Turner & Müller, 2006). Quite often the studies used a combination of question layouts depending on the types of questions being asked. The most common question layout was that of a Likert-scale which was used in nearly every one of the studies Müller performed (Biedenbach & Müller, 2012; Müller, 2003; Müller et al., 2012; Müller & Turner, 2007a, 2007b, 2010; Tabassi et al., 2016; Turner & Müller, 2006). Other question layouts used were multiple choice (single response or multiple responses), 6-point scales and close-ended categorisation questions (Müller & Turner, 2007a, 2010; Yang et al., 2011).

The questionnaire data were analyzed using a wide range of statistical techniques. One common tool used was factor analysis. Regression analysis was also a common tool utilized for analysis of data, including Multivariate and Multiple Regression analysis techniques. A snapshot of the variety of statistical tools used throughout Müller's bank of research have been combined into a table for a better understanding of the spread and overlap of tools used. This can be seen in Table 8.

Table 8: Statistical Techniques Applied in Müller's Research

Technique Name	**Research paper(s) in which it can be found**
Regression Analysis (Standard, Multiple, and Multivariate)	(Biedenbach & Müller, 2012; Müller & Turner, 2007a, 2007b; Turner & Müller, 2006)

Technique Name	Research paper(s) in which it can be found
Canonical Correlation Evaluation	(Biedenbach & Müller, 2012)
Smart Partial Least Squares (PLS) Path Modelling	(Tabassi et al., 2016)
Factor Analysis (including Exploratory, Unrotated, and Confirmatory)	(Joslin & Müller, 2015; Müller et al., 2012; Müller & Turner, 2010; Tabassi et al., 2016)
ANOVA Analysis	(Joslin & Müller, 2015; Müller et al., 2012; Müller & Turner, 2010; Turner & Müller, 2006)
Normalization of Sample Data	(Müller, 2003; Müller & Turner, 2010)
Mann-Whitney Tests	(Müller et al., 2012)
Factor Analysis with Varimax Rotation	(Joslin & Müller, 2015; Yang et al., 2011)
Haman Test	(Joslin & Müller, 2015)
Principle Component Analysis with Varimax Rotation	(Müller, 2003)
Goodness-of-fit (GOF)	(Tabassi et al., 2016)
Cronbach Coefficient	(Yang et al., 2011)

While there is a lot of variation in the methodologies used throughout Müller's work, it is apparent that there are some common themes. To start, his work relies heavily on both secondary and primary data sources to ensure a balanced approach to the research being compiled and analyzed. As well, throughout all of the studies in which he utilizes primary data sources, he has ensured that measures have been put in place to decrease the amount of bias in his studies. The reliance on other bodies of knowledge for guidance when developing questions, in order to both avoid biases and develop relevant and clear questions is another intersection between his bodies of work. Finally, while he uses a variety of statistical tools to

analyze his research, he has done so in a thorough manner and there are a number of statistical tools that have appeared in multiple research papers.

3.5 Conclusions and Comparison

As Müller's body of work expanded on the relevant literature surrounding project management through the use of primary data collection and analysis, he was able to develop conclusions to the hypotheses he had established. These hypotheses were generally based off of knowledge gaps apparent in the existing literature and used a comprehensive literature review to develop them. While all of the conclusions drawn from some research papers and Müller's book comprising the work of Müller's that was reviewed will be discussed more holistically, the individual conclusions for each paper can be viewed in Table 9 for a more specific and pointed description of the individual studies.

As mentioned previously, much of Müller's work covered aspects of leadership, with respect to various other portions of project management. One thing that he noted consistently was the lack of research on how leadership impacted project management or the role it played. This was most likely due primarily to the outlook of the project management field on leadership as a non-important factor to the success of projects. This has led to a major research and knowledge gap that Müller has aimed to fill through a variety of perspectives.

Table 9 presents a more specific breakdown that includes the most important conclusions from each of the studies reviewed in which the author was Müller or some other researchers who wrote about Müller's work.

Table 9: Müller's Research Conclusions

Publication Name and Citation	**Description of Research Topic Conclusion**
Absorptive, Innovative and Adaptive Capabilities and Their Impact on Project and Project Portfolio Performance (Biedenbach & Müller, 2012)	Of the three capabilities assessed, the absorptive and adaptive capabilities are the primary contributors to the performance outcome of projects, whereas innovative capabilities only made minor contributions. This supports the existing literature (based on firm performance) but expands it to include the project management context. It also shows that managing these three capabilities should accompany the management of early project phases.

Publication Name and Citation	Description of Research Topic Conclusion
	Finally, findings show that the fields of project management and strategic management are complementary.
Matching the Project Manager's Leadership Style to Project Type (Müller & Turner, 2007a)	Conclusions drawn from the study indicate that a project manager's leadership style does influence project success, and that different leadership styles are appropriate for different types of projects. Furthermore, project managers will more often be chosen based on their leadership style fitting the project when the project is more complex. Finally, emotional competence is a significant contributor to project success regardless of the complexity of the project, while managerial competence is sometimes significant and intellectual competence is sometimes negatively correlated.
Leadership Competency Profiles of Successful Project Managers (Müller & Turner, 2010)	Implications from the study include the need for practitioners to be trained in the soft-skill factors of leadership, and that this will be particular depending on their project. In a more theoretical sense, the research implied that there is a need for more transactional leadership styles in simpler projects, compared to a need for more transformational leadership styles in more complex projects.
Relationships between Leadership and Success in Different Types of Project Complexities (Müller et al., 2012, p. 78-81)	The research showed that Emotional Quotient (EQ) and Managerial Quotient (MQ) leadership competencies are correlated with project success, however, they are moderated by different complexities. EQ is moderated by a complexity of faith while MQ is moderated by both faith and fact complexities. While the complexity of interaction has a direct effect on project success. The three intelligences that Müller describes are EQ, Intelligence Quotient (IQ), and MQ. EQ represents the emotional dimensions, those being: Self-awareness, Emotional Resilience, Intuitiveness, Interpersonal Sensitivity, Influence, Motivation, and Conscientiousness. IQ represents a mixture of three intellectual dimensions, those being: Critical Analysis and Judgement, Vision and Imagination, and Strategic Perspective. MQ represents the managerial dimensions, those being: Resource Management, Engaging Communication, Empowering, Developing, and Achieving. The research also indicates that there is not much variation across project types between EQ, IQ, MQ, complexity of faith, fact, and interaction suggesting they may be used as a

Publication Name and Citation	Description of Research Topic Conclusion
	common language for researching and learning across project types. Complexity of Faith, as stated by Müller is "similar to uncertainty, as it is present when creating something unique, solving new problems or dealing with high uncertainty. In such situations, one does not know that the project outcome will work, but has, or at least pretends to have, faith in it". Complexity of Fact on the other hand is described by Müller as "similar to structural complexity, this requires dealing with a huge amount of interdependent information. Here the challenge is to keep a holistic view of the problem and not to get lost in quantities of factual details. The construction of a refinery is a project dominated by such complexity, there are many constraints to consider, and many people involved, but these are not uncertain, they are facts".
Relationships between a PMM and Project Success in Different Project Governance Contexts (Joslin & Müller, 2015)	Three independent factors - completeness, supplementation, and application of the elements of a PMM - are significantly correlated to project success (22.3% of the variation in project success can be explained by applying the relevant PMM elements to a project throughout its lifecycle). Results of the study also show that the experience of using a PMM and the correct choice of tools, techniques, and processes are both relevant success factors for projects. In terms of the research questions, they can now be answered: There is a positive relationship between PMM and project success, and that only one of the moderating factors of governance acted as a quasi-moderator between PMM and success, with the other's role being indeterminable.
The Influence of Project Managers on Project Success Criteria and Project Success by Type of Project (Müller & Turner, 2007b)	The results suggest numerous implications for sponsors of projects: ▪ <u>For managing the importance of project success factors:</u> Project managers (PMs) seek challenging projects and therefore PMs should not be assigned to projects below their management capabilities, as well as, the fact that team satisfaction should be taken into account when assigning PMs to business-critical projects. ▪ <u>For managing projects towards successful outcomes:</u> Project managers assigned to the wider project lifecycle tend to be more successful, therefore, project managers should be assigned at the earliest stages and lead the project right to the end; fixed-priced projects are managed more successfully than their re-measurement counterparts; project managers working in their own

Publication Name and Citation	Description of Research Topic Conclusion
	culture tend to be more successful than expatriate counterparts; and project management certification alone is not sufficient for good project execution. ▪ For equal opportunities and diversity: the gender of the project manager plays no role in the success of the project; nationality will play a role, but this is culturally dependent: often the difference will be based on local and cultural knowledge; age also plays a role as it is reflecting the growth in experience.
The Project Manager's Leadership Style as a Success Factor on Projects: A Literature Review (Müller & Turner, 2005)	This was a literature review which concluded that there was a lack of Project Management literature on the role of leadership in project success. While it is considered a success factor in general management literature, it has mainly been ignored in project management literature. The literature on project success factors has also largely ignored the role of project managers and the impact their leadership styles and competence have on project success. Essentially the conclusion is that more research needs to be done with regards to this topic.
Determinants for External Communications of IT Project Managers (Müller, 2003)	The results from this study show that relational norms are important for the stabilisation of communications practices. It also showed that the higher risk a project is, the higher the frequency of communication will be, and it will also increase the preference for face-to-face meetings while decreasing the preference for written reports. Finally, the study shows that the structure of the organization has no impact on the communications preferences.
Leadership Competences of Sustainable Construction Project Managers (Tabassi et al., 2016)	The study, and the model developed, show that the leadership competencies and transformational leadership qualities of project managers experience a direct impact on the success criteria with regards to sustainable buildings. The results also indicated that the intellectual competency of PMs plays the largest role in sustainable building achievements.
The Association among Project Manager's Leadership Style, Teamwork and Project Success (Yang et al., 2011)	The study indicates that increases in levels of leadership might enhance the relationships among team members. It also indicates that teamwork influences project performance in a statistically significant manner. Lastly, the research suggests that the type of project has a moderating effect on the relationship between these teamwork dimensions and the overall success of the project.

Publication Name and Citation	Description of Research Topic Conclusion
Choosing Appropriate Project Managers: Matching their Leadership Style to the Type of Project (Turner & Müller, 2006)	Through the primary research performed in this book, the two research questions could be answered: The project Manager's competence (including leadership style) does influence project success when looking at the personal characteristics (leadership style and emotional intelligence) which are both correlated with project success, and that different profiles of competence (particularly leadership style profiles) are appropriate on different types of projects when looking at the personal characteristics.

From the conclusions drawn in Table 9 as well as summarised above, there are a number of useful pieces of information towards the work presented in this research thesis. Leadership and the role it plays in project management has been the primary focus of much of the research that this research has undertaken, and it is important to note that this role was analyzed in the form of a literature review, compiling the findings from a large number of academic and industry papers, reports, books and websites. The present body of work performed by Müller and his colleagues has had many of the similar research questions as this research work, specifically with regards to the role of leadership in project management.

Müller has taken it a step further in much of his research and performed many research studies while gathering primary data, performing interviews and surveys, and analyzing the resulting data. As such, his work is a useful knowledge bank in support of the topic of interest. More than this however, given the similarity in the topics of interest between this research work and Müller's work, his primary research can be used as a tool to help develop and perform our own primary research studies.

Starting with the knowledge gained from these papers, many of the conclusions he has drawn support the work that is undertaken in this research thesis. One of the main topics that has been reviewed is the link between leadership and project management on the success of projects in IT manufacturing firms. While most of the research Müller has performed is not specific to the IT industry or Manufacturing firms, he has researched the links between leadership, project management and project success. One of the key findings that he has come up with is the fact that leadership, both in terms of competencies and leadership style, has an impact on the success of projects. This supports the findings that this research work came across during the literature review of the topic. As well, Müller came to the conclusion that

different types of projects will differ in terms of what leadership qualities, capabilities, and strategies will be most beneficial for the success of the project. Once again, this is a finding that supports the research documents analyzed in the literature review section of this paper.

Another supporting finding was that increases in leadership levels may in fact enhance the relationship between team members, which is an important point, given that Müller also found that teamwork has a statistically significant impact on the performance of a project. This particular finding indicates that leadership has a more intricate impact on project success than simply the direct link that is initially apparent. Another study by Müller further supported the need for strong leadership in project management through the discovery that both emotional and leadership competencies play a role in project success. This indicates that being a leader should not just be about following a formula. It is also about having the emotional intelligence to lead and support a group of individuals with their diverse needs, strengths, and weaknesses.

Finally, the research by Müller indicates a need for training of project managers in the more soft-skill aspects of leadership, and that the more complex a project, the more the leadership style should be transformational rather than transactional. This is complemented by another one of his research papers that indicates that project managers should not be put on projects that are below their level of expertise in terms of complexity. Both of these studies support the research performed in this work in terms of the skills and components of leadership that are important, and often not taken into account.

In terms of the benefit of these studies towards producing a primary research study, there are even more benefits. Müller has researched many similar topics to the one that has been research in this work. As such, there is a wealth of information present in Müller's studies in terms of potential methodologies, analysis tools, and subject banks. Reviewing these studies and applying the relevant methodological tools to the study performed in this research will be beneficial in two ways. First, it will act as a form of replication for some of the techniques and methods that Müller used in his study. This is often beneficial because it is a 'double check' for studies to ensure that the outcome, when repeated, will be the same. Second, it will be beneficial because it gives highlights on how to gather, test and analyze the data. Replicating the study methods and practices is a helpful tool for developing a framework to follow where there is more certainty that this specific framework will work properly. As well, these papers

offer insight into how Müller disseminated his surveys, what types of individuals he was targeting, and where he targeted them (in terms of organizations). This is particularly useful since the focus is to look into many of the same types of professionals for the analysis and as such, may be able to reach out to the same organizations or target similar groups.

4. METHODOLOGY

4.1 Research Methodology and Design

This section includes an introduction on research methodology and design, and what are the chosen methodologies that best fit the purpose of this research work. Then, it was important to speak about the 'Research Onion' and how the application of it was for this research.

4.1.1 Introduction

When conducting any kind of research, it is crucial to have a methodology in place. Research methodology is an incredibly broad topic that refers to the entire research process, from the design, to the sampling approach, the nature and procedures of data gathering, such as surveys or in-person interviews, to the interview schedule and the coding frame (Bryman, 2015). A lot of this information has already been covered, therefore, in this section the focus will be on the experimental and the data analysis methods to be used.

An experiment is a type of research design that rules out alternative explanations of findings by dividing the sample into two groups: an experimental group that is exposed to a treatment, and a control group which is not, as well as randomly assigning individuals to the two groups (Bryman, 2015). By this definition, the research performed in this project cannot be defined as an experiment as there is no treatment being applied. In order to avoid any confusions, the section where the sample organizations will be contacted, and data gathered, will be referred to as the experimental portion of the research.

When selecting the method for data collection, it is crucial that the method fit well with the intended purpose of the data and any restrictions that the researcher might face. There are a number of different factors that must be considered when deciding which method is the most fitting for the project. First, is the time-frame in which the experimental portion of the research can be performed (Bryman, 2015). If time is limited, it may make more sense for the research to be conducted over surveys or online interviews, rather than drawn-out in-person interviews (Bryman, 2015). The second factor to consider is the scope of the research (Bryman, 2015). It is important to consider if the aim of the research is to understand an entire population, or just a small subset in a specific geographic location. Methods such as mail surveys are quick and cheap to administer to a large group of people, whereas an in-person

interview or an ethnography would take much more time, making it a less viable option when studying underlying trends in large populations (Bryman, 2015).

Researchers should also consider what kind of information they want to get out of the research. Should they be looking for broader data that does not have to be in-depth, it does not make sense for them to perform a participant observation study as they would gain no underlying population trend information from such a study (Bryman, 2015). Often, methods will follow a rule of broad and shallow, or narrow and deep, so to speak. What this means for research is that if a researcher is looking for information that will apply across a variety of situations and individuals, they need a method that collects a broad scope of data. Broad methods need to reach a lot of people, and with resource restrictions, doing so requires that the information gained will be less detailed, often omitting reasoning and emotions (Bryman, 2015). For researchers who are looking for more specific and detailed accounts of a small subset of the population or unique cases, more qualitative methods will be useful. With these, the information gained reflects not only the 'what', but the 'why' behind people's beliefs and actions (Bryman, 2015). It is important that the method be chosen with care, or a research project is at risk of failure due to either a lack of information, or a lack of time to complete all of the samples.

4.1.2 Chosen Methodologies

This research project was focused on a portion of SMEs which work in the manufacturing sector who have performed multiple IT projects. The aim of the experimental portion of the research was to gain a better understanding of how leadership affects these types of projects. As such, it will be important for the chosen method to reflect the in-depth understanding desired. There are a number of options available to gain this in-depth knowledge, but the one considered the most beneficial to this project was to perform single in-person interviews with a project manager from each of the chosen sample organizations. Prior to performing these interviews however, a number of precursor steps were taken.

First the chosen project managers were contacted to confirm their interest and availability to participate in the research. For this research, we chose to engage the project managers as the sole point of view for deriving data rather than engage multiple stakeholders such as teams, customers, or shareholders. This was because we wanted a technical point of view of

individuals who are working directly with the project teams and oversee all aspects of the project process. Having a viewpoint from others would be beneficial but it might not have provided a picture as complete as with project managers as they have oversight and a general understanding of the project throughout its lifecycle. Given the amount of time required to conduct interviews and therefore the limited number of interviews able to be conducted, contacting project managers and not other stakeholders made the most sense. Once the project managers were confirmed, information about them and the company they worked for was collected. This was done to ensure that they fit with the target population the research was directed at. Company information was collected primarily from the organization's website, news articles and reviews of the company. Information collected on the project managers was found principally from their resumes and LinkedIn profiles. Once all of this background information had been collected, a multiple-choice survey was sent to each participating project manager.

The multiple-choice survey included twenty leadership factors that the literature has showed positive effect on project success. Throughout the deep literature review that has been conducted in the beginning of this research, big number of important leadership factors that has relation to the success of projects have been found. Yet, a narrow down process was found essential to be conducted on the factors so that "overchoice" is avoided. "Overchoice" or "choice overload" which occurs usually when many similar options are available. "Overchoice" let a decision becomes overwhelming due to the many potential outcomes and risks that may result from making a choice. Therefore, out of so many leadership factors, only 20 were chosen to be presented to the project managers in a survey format. These 20 leadership factors were the ones that were repeated in multiple resources, whether it is a journal paper or a book.

The project manager is asked to choose answers based on experience that express the level of agreement. The survey could take five minutes or less to be answered in full. The top ten leadership factors selected among all project managers are presented during the in-person interviews for discussions. The participants were given a limited number of factors to help focus their answers and direct it into a narrowed path. This narrowing will create a kind of nitpick list that enables the research to move swiftly towards clear direction. As mentioned previously, it was important to avoid the "overchoice" for the survey, it was even more important to avoid it for the interview. Especially, the project managers had a limited time to

meet because of their loaded schedule. Thus, only the top 10 leadership factors were taken from the survey to the interview for a detailed discussion.

In-person interviews, each lasting between 45 minutes to an hour, were favourable because they allowed the researcher to ask open answer questions, ask for prompts if the desired information was not quite being given, and direct the topics as necessary (Bryman, 2015). By doing interviews, more information was gained on the topic of interest and there was no need to wait for respondents to give back forms, as all of the necessary information was discussed during the interview time slot.

In-person interviews were planned for this particular research, however, given that the sample interviewed were busy project managers at SMEs, some individuals were not able to take the time out of their busy schedules for an interview. For the ones still interested in participating, there were two other available options for performing interviews, in case the managers needed to be away from the local office during the scheduled interview dates. They were over the phone, and over a video calling service such as Skype. Both of these options allowed the interview time to be more flexible so that both the researcher and the project manager have enough time set aside to get through all of the interview questions. These methods were considered favourable to simply sending another email with questions, since it avoided the possibility of managers reading all of the proposed questions before answering, which could cause bias (Bryman, 2015). Although the hope was that all of the interviews would be performed in a standardized fashion to avoid biases, it was understandable that this was not entirely possible.

Regardless of the chosen communication method, used in conducting the interview for each of the sample organizations, the same base interview layout, or question set, was used. The interview layout comprised a variety of different styles of questions, which covered a number of topics of interest. The first style of interview questions were open-ended questions, where the interviewee was free to answer the questions as they saw fit. A majority of questions of this style were used throughout the interview. If the information the researcher was trying to get at was not answered, prompt questions were employed in an attempt to uncover the desired information. Due to these open-ended questions, interviews differed slightly from each other.

The second style of interview questions aimed to derive a Business Case Study out of the project manager experience, to highlight how Leadership effects project success and to shed the light on the importance of timing, when using these leadership factors. The business case study illustrates a real-life experience from a previous project they had worked on. This portion of the interview was not a necessity and was offered as an option, if the project manager in question was interested and willing to provide an anecdote. If they were not, then the project manager will speak in general about the effect of leadership factors on project success.

Finally, the last style of interview questions that were asked were a multiple-choice survey. The project manager is handed a hard-copy of the survey. The goal is to reveal the importance level of using each of the ten leadership factors in each of the project phases. The survey could take ten minutes or less to be answered in full.

During the interviews, the discussions were recorded so they could be analyzed later on. Using a recording device guarantees that all of the information is captured. Therefore, this method was considered the ideal way to keep track of the interviews. Of course, the issue of ethics must be considered. Some individuals do not feel comfortable being recorded while they are being interviewed and as such this method may not consistently be used for the interviews performed. Recording was used for those interviews where the project manager had given consent. In addition, written notes were taken by the interviewer. This method was used for every interview, including those which had been recorded. Then the auditory record information was transcribed, and the written notes expanded upon.

After the interviews had been completed and the data had been transcribed, the data needed to be coded. Most of the information gathered was a combination of close-ended questions (quantitative, i.e. surveys) and open-ended questions (qualitative). To code this, an intensive process was used where answers were analyzed and divided into groups, based off the responses given and the ideas that each response presented. Sometimes more than one idea was presented, which added another layer to the coding process. The process for coding the closed ended questions was a little less intensive, given that information could easily be divided. The coded data was then analyzed as a whole to determine any themes present across the various organizations. This data was put through a regression analysis to further

understand the data, as well as to allow an interesting way to present the findings to interested parties in the field.

Figure 8 outlines the steps that needed to be taken and where they fit in the larger picture of the research project. Steps in light brown represent the methodologies discussed, while steps in grey represent the background information, and steps in yellow represent the final product step.

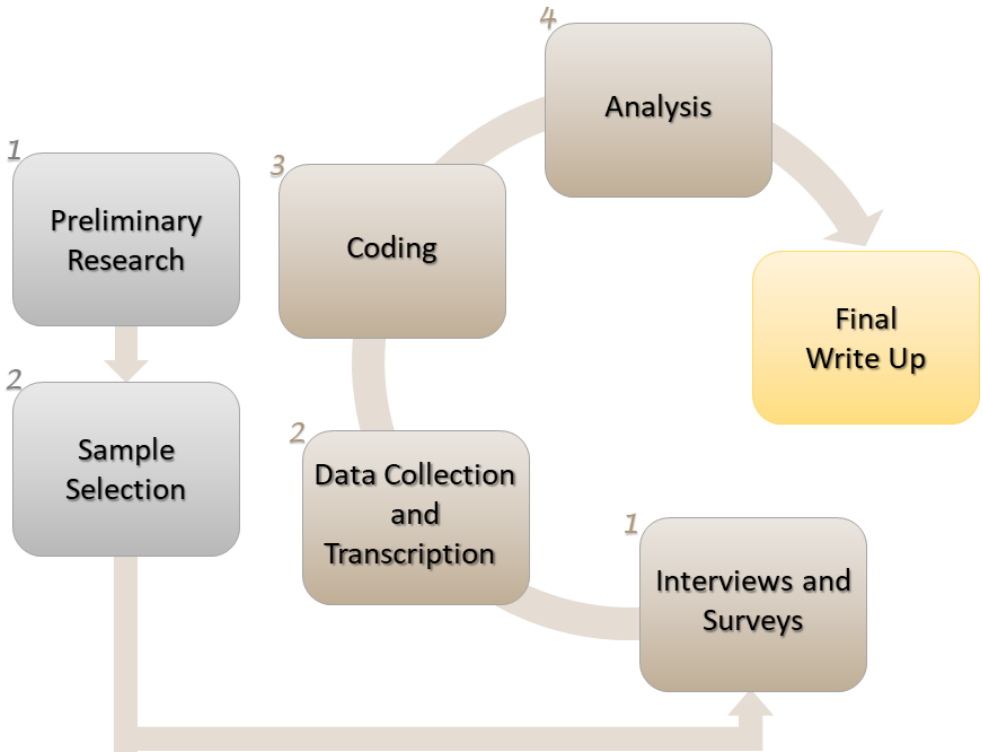

Figure 8: Research Processes

4.1.3 The Research Onion

The research onion was an idea originally created by Saunders, Lewis and Thornhill (2009) to describe the stages that a researcher must go through when formulating a methodology for their research. The steps of the onion start from the outside layer and progress to the centre – the analogy being to peel away the layers of an onion. As can be seen in Figure 9, which is a diagram of the research onion, the first step to be implemented when formulating a methodology is identifying a Philosophy. Six layers in total make up the research onion, with the inner most layer being the most specific step: that of deciding upon techniques and procedures.

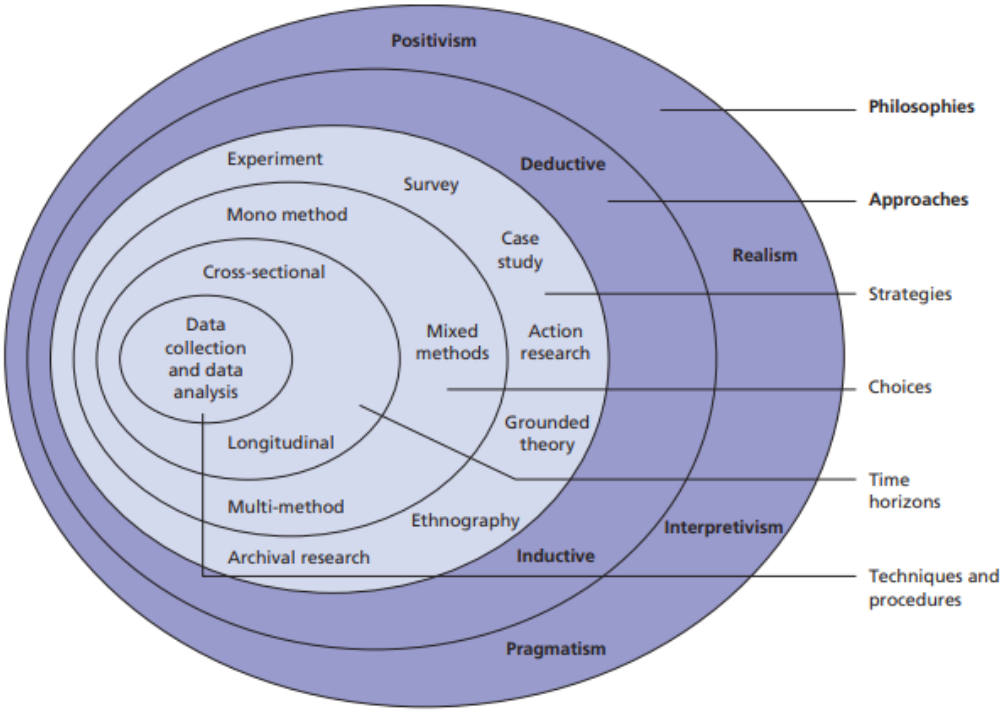

Figure 9: The Research Onion
(Saunders, Lewis, & Thornhill, 2009)

Starting with the outer-most layer, a general philosophy should be developed. Choosing how to approach the research is an important step as it essentially refers to how the project team is going to approach knowledge development (Saunders, Lewis, & Thornhill, 2009). This includes the nature of the knowledge being developed (Saunders et al., 2009). The research philosophy adopted reflects important assumptions about how an organization or project team views the world (Saunders et al., 2009) and therefore presents a starting point for how the rest of the project methodology should be approached. Moving inward through the layers, the second-most outer layer discusses the approach that will be taken when developing theories. The research approaches will often follow from the philosophy that the organization has for the project, for example if a positivism philosophy is being employed, a more deductive approach to the research would be a more natural step than taking an inductive approach (Saunders et al., 2009).

Once the philosophy and research approach have been developed, the next few layers to be discussed deal with the design and purpose of the research study. Deciding upon a methodological approach to the research, and then the more specific tactics that will be used to implement the study should be decided upon. This is where the decision on the use of

quantitative or qualitative data comes into play (Saunders et al., 2009). As well, a decision will be made on how many different strategies will be used to collect data and more specifically what these strategies will be (Saunders et al., 2009). The final decision to be made, with regards to these middle layers of the 'onion', is the time horizon that will be implemented. This refers to whether the study will be a cross-section of a moment in time across a large group of individuals or whether it will be longitudinal and focus on a smaller group of people for an extended period of time (Saunders et al., 2009).

Finally, the decision on the specific techniques and procedures to be employed should be made. This is represented by the inner-most layer of the onion and embodies the final stage of methodological development for a research project as described by Saunders, Lewis, and Thornhill in their text. This stage discusses all of the finer details and, as such, it is important to have established the broader approaches for data collection and techniques discussed in the outer layers before commencing to implement these tactics.

4.1.4 Application of the 'Research Onion'

The current research project being discussed has followed many of these steps to ensure that the methodological practices make sense with one another and with the organization's viewpoints. As a starting point, the philosophy and the general theoretical approach to the research had to be decided upon. For this research, a deductive approach was taken, and therefore a theory was developed prior to the collection of data (Saunders et al., 2009). This research used a mix approach of theory testing and theory building as there was preliminary research to find out 20 leadership factors that has an effect on project success, then the surveys and interviews narrowed down the leadership factors to 10 factors with some experience-related descriptions around them, after that there was a secondary, more detailed, research on the specific 10 leadership factors. Therefore, this research uses a deductive approach in which the first step in the work was to develop the theory and then to test it via surveys, interviews, and business cases. This approach was a natural decision given that the philosophical outlook on research development was that of a more constructivist-interpretivism perspective. What this implies is that a much more scientific approach to research development was taken. The observable facts and available information were used to develop a testable research structure. This being said, it has been noted that it is difficult to solely assume the position of one philosophical approach as these theoretical models do

not capture the intricacies and complexities present in the real-world. This makes the decision on choosing which philosophical viewpoint to follow more about having an understanding of which viewpoints enjoy the most impact on the project as well as how personal philosophical viewpoints will sway the project's direction.

In terms of the middle layers of the 'onion', this is where the methodological structure gets a bit more specific. For the research project in question there are a number of different pieces that can be discussed. To start, the methodological choice can be discussed. For the present project, the methodological choice selected was a multiple methods approach. This use of numerous collection techniques and analysis procedures creating a more complete picture of the problem being discussed. It also allowed for the creation of a plan of attack for solving it that took a multiple angled approach. For the next layer inwards, that discussing the strategies employed, there were a number of different ways in which the research aimed to achieve answers. The study was primarily an exploratory study, emphasising a literature review and including interviews with experts. Further specific strategies employed included a survey as well as multiple case studies. Finally, the study took a cross-sectional approach in terms of the timeframe employed. The project managers interviewed were contacted for a single interview where they gave information about their projects and their organization as it stood at the time when the interviews occurred. They were not contacted a second time a number of years later so that a comparison could be made as that was not particularly relevant to the research aim. If they had been contacted multiple times, then the study would have been considered a longitudinal study instead.

Finally, the inner most layer of the onion depicting the specific techniques and procedures should be discussed with regards to the project in question. Data was collected using forms of recording during the aforementioned strategies. Data was then analyzed using coding and regression analysis so that the data could be compiled and easily presented. It was possible for all of these methods to be employed properly, with questions formulated with intent, because the broader picture was first discussed. Utilising a methodological approach akin to the research onion, thereby starting with the more general ideas for creating a methodology and then working down to the specifics allowed for a methodology to be planned and executed that followed a cohesive and consistent flow.

4.2 Sample Selection

In this section, five main topics will be addressed. First of all, the considerations that should be taken into account when selecting a sample. Then, the importance of carefully selecting a sample to this research. After that, the selection criteria and process that was used for this research. Finally, the sample that was selected.

4.2.1 Considerations

The first thing to understand when selecting a sample for research is what a sample is, where it is being selected from and why. Sampling refers to the selection of a sub-set of a population for research (Bryman, 2015). A sample is therefore this final selection, which is pulled from the sampling frame, or the subset, of that larger population. The aim of the research will determine who within the population should be targeted, and the sampling frame will take shape from that, while including considerations on the limitations of the researcher and the time frame.

When identifying criteria to select samples, there are some overarching rules that should be adhered to so that the samples accurately represent the population the research is targeted at. If samples are not selected appropriately, biases may skew the data collected, rendering the research unusable or inaccurate (Veaux, Velleman, & Bock, 2014). Throughout all stages of a research project, biases will be an issue. It is important to be familiar with all of the possible biases that may affect research, with particular attention to those which are most applicable. A number of potential biases to be aware of have been listed below, which have all been mentioned by Alan Bryman (2015) as well as Richard De Veaux et al. (2014).

1. Non-response/participation bias;
2. Response bias;
3. Coverage/under coverage bias;
4. Culture bias;
5. Confirmation bias;
6. Non-participation bias.

In terms of choosing samples, the most important ones to be aware of are the coverage/under coverage bias and the non-response/participation bias. It is important to select a sampling frame that is representative of the overall population. When selecting a sampling frame, the larger target group of people and all of the smaller segments of that population should be considered. The research question should also be considered. This way, when a sampling frame is selected, all known biases have been taken into account so that the final sample can be as representative as possible. It is also important to consider the issue of non-response/participation bias. It is almost always the case that some individuals selected will chose not to participate. To ensure that the research has the required number of responses, or that it is as robust as possible, the sampling frame should be widened and/or the number of samples should be increased to account for this bias.

Of course, it is often the case that some biases cannot be avoided, especially when working with limited possible samples or access to the population. As such, it is important to acknowledge the shortcomings that may affect your research due to the existence of these biases. For example, a culture bias will nearly always be present, especially with research done solely by researchers hailing from one location or upbringing. This is not necessarily a bad thing; however, it is often a good idea to state in the research the cultural biases that a researcher has so that anyone deciding to read the research has that knowledge and an understanding of why things were done a certain way and why certain conclusions were drawn. In cases where there is a lack of access to the desired field, the main bias that will show up due to the circumstance is a non-response/participation bias, as targeted individuals will be mistrusting of the researcher or simply will chose not to give them their time since they feel it is not important.

To avoid these, some steps should be taken. The first step is one that is often difficult to achieve when gathering data in many situations. This is the criteria that the samples be selected randomly. In the research performed sampling method called simple random sampling was the option considered.

4.2.2 Importance for Research

Selecting an appropriate and representative sample is incredibly important to ensure that the outcomes are relevant, that they make sense, and that the final data can be manipulated so

that conclusions can be drawn from all the raw data (Bryman, 2015). If the samples are not selected appropriately, they may not be relevant to the research question, which means that all of the research conducted was useless for the aim of the researcher. Samples that are selected which are not representative of the population will contain biases which will affect the entirety of the research. If certain sections of the population are under-represented, or missed entirely, the information that they may have offered to the study will be missed as well, skewing the final data and portraying the overall population in a way that may not be accurate.

4.2.3 Selection Criteria

In the research pertaining to this study, the portion of the population that is being targeted is SMEs in the manufacturing industry, with a particular interest in those which have 7 to 12 projects dealing with the IT. For this research, it is important to select organizations within the manufacturing sector who have the desired number of IT projects. If the selection of SMEs was just at random from all possible SMEs, and samples were selected from organizations that had nothing to do with either sector, the conclusions drawn from the research may not be true for the manufacturing sector. Crucial information pertaining to this sector would be missed, meaning any improvements or frameworks applied from the research will not be an appropriate fit.

Within the sample frame of SMEs in the manufacturing industry with many IT projects, a variety of different types of organizations should be sampled to ensure that no portion of this sampling frame is missed. Since contacting and surveying individuals within this sector will require consent from members and a willingness to participate, random sampling was the best option to consider. Thus, it will be crucial for all of the potential biases to be considered and avoided as much as possible. For those biases which it may be difficult to avoid entirely, a statement should be made.

There will be further criteria for the selection of appropriate companies through the projects. As established, the SME must have a particular number of projects within the IT (7 - 12). As well as the number, these projects should also have progressed over a certain length of time. The selected timeframe is quite broad, including all those projects which have taken place between 3 weeks and 6 months. In addition, projects should have been worked on by teams

of at least three individuals. By including some broad criteria for the projects, it is possible to narrow down the search slightly while still enabling a comparison between SMEs based on differences within each criterion.

On top of criteria for the projects, it will be important to ensure that the project manager, who will also be the person to be interviewed, has enough experience with project management to give comprehensive answers during the portion of this research. As such, a requirement of having led at least 10 projects, with at least the minimum requirement of 7 within the IT sector, will be applied. Ideally, interview candidates will have worked in the manufacturing industry for at least 5 years, to ensure that they have a well-rounded understanding of the industry as well.

4.2.4 Selection Process

First the appropriate sampling frame was identified from the larger population of SMEs. This was done when the research question was decided, and the research aim was identified. The group of Canadian manufacturing SMEs with projects in the IT sector was the end decision. Following the criteria for selection and looking at the limitations of the researcher, a scope in terms of the geographic spread of these organizations was required to define the sampling frame. It was decided that the samples would be drawn from SMEs within Ontario province, in Canada, with a potential to expand into SMEs in the other provinces, should there be a requirement to contact more SMEs. There is no obvious reason why the targeted SMEs in Ontario should be inherently different from SMEs anywhere else. Therefore, this specific area should be generalizable to the entire population of SMEs in the manufacturing industry with high involvement in the IT sector. Finally, the last criteria that need to be upheld are those pertaining to the projects that each company has completed within the IT sector. To ensure that these criteria are met, they will be stated in the initial communication with the companies selected to guarantee that those who do not meet any of the above outlined project criteria choose not to participate.

Simple random sampling is an unbiased form of sampling in that each population member is independent of all other population members and has no better chance of being selected than any other (Hulley, Cummings, Browner, Grady, & Newman, 2013). In the simplest form of simple random sampling a random sample is drawn from the accessible population, for

example from an institution list or directory, and then a random sampling procedure is implemented (Hulley et al., 2013). Often this procedure will use some form of random selection to pick the members, for example a table of random numbers or a draw from a hat of slips of paper (Hulley et al., 2013). When implementing simple random sampling it is important that once a member has been chosen they cannot be re-chosen, therefore dubbing simple random sampling as 'sampling without replacement' (Hulley et al., 2013). One point of note with the definition of simple random sampling is that it involves the accessible population, hinting to the fact that given various circumstances, the entire population may not be able to be included in the sampling process (Hulley et al., 2013).

For the research conducted in this study, the accessibility of the population is important to note because while there were many organisations that fit the criteria for the study, the time commitment required from project managers was a turn off for many busy project managers. This is simply one example of why the accessible population was so much smaller than it could have been.

While methods of simple random sampling were used in the study, further methods of sampling were used to reduce the bias that might appear, given that there were so few members chosen to be studied. One such method was a stratification of the population. In the overall industry studied there were a number of sub-industries and more specific fields that fell into the category of organisations that fit the criteria for the study. This division of the field was used in the sampling method so that a more accurate representation of the field overall could be drawn. Rather than run the risk of ending up with five members from the same sub-sector as the studied samples, a random sample from different sub-sectors was chosen. In this way, the varied opinions and perspectives of sub-sectors within the studied population could be represented. This was important because of the small sample size that was chosen for the study. While it was important for the selected members to be as randomized as possible, it was also important for the sample to be representative in order to reduce bias and provide as accurate a picture as possible. Searching was done randomly within each of the strata and the first of the organisations to respond within each stratum was the one chosen.

While it is often thought that the larger the sample the more accurate the data, it is important to recognise that a large sample size is not always necessary (Hackshaw, 2008). It is also important to note that the definition of what is 'small' will vary greatly depending on the study

itself and what it is trying to achieve, as well as how big the population is to begin with. A population consisting of 30 or so companies will not need a sample size of 25 of those companies, for example. Given the industry and the estimated population size of the study in question, it makes sense that the population size was smaller than other studies that have population sizes in the hundreds or thousands.

Having a small number of sample subjects can also be beneficial in a few ways. First it is less time consuming to conduct the studies and therefore the data processing takes less time and the information can become readily available more quickly (Hackshaw, 2008). This makes smaller sample sizes good for conducting venture studies, or those studies that are looking to test a new research hypothesis (Hackshaw, 2008). The study in question looked to fill a research gap and therefore fits into this particular niche of studies.

On a final note, it is important to understand the limits faced by many studies in acquiring larger research sample sizes. As has been noted previously, monetary and time constraints, as well as barriers to acquiring participants, can all add to the difficulties faced by organisations looking to increase the sample size of their studies.

To attempt to eliminate as much bias as possible, organizations will be selected that fit within the sample frame but that are all slightly different, for example: involvement in different sub-sectors of the manufacturing industry, some start-ups that are fairly new, some that are more established, some with more or less involvement in IT projects, etc. This way there will be a variety of potential perspectives and hopefully in the batch of samples which have agreed to participate will share opinions and ideas that are representative of the population. In addition, project managers who are currently working in IT companies but have a previous solid experience in the manufacturing industry will be considered.

The intention of this research project is to determine how leadership impacts IT project success in the manufacturing industry. Therefore, the selection of companies and following the outlined criteria is very important. It is important to gather appropriate data to test the hypotheses about how leadership affects project success. Without a pool of companies that fit properly into the population for which information is being gathered, the final data gathered will be useless, regardless of how great the interview question set was built and how well all the raw data was assembled and manipulated. Without appropriately selected samples, there is the risk of having a conclusion that is completely wrong, and because tests

were not run on the right group of SMEs, it will not be known if the conclusion drawn also fits for them.

4.2.5 Selected Samples

The chosen SMEs to contact have been listed in Table 10, with a column for the organizations' reference name and another for a short description of what each organization does. Due to some privacy preferences of SMEs selected, a unique reference name will be used for each organization. The five samples that are used in this research were chosen to represent a close-up case which help us retrieve big amount of useful information based on practical experiences of the project managers within their organizations. This small sample supports the depth of case-oriented analysis that is fundamental to this mode of inquiry and thus it helps the study reveal "information-rich" cases. In addition, SMEs in the manufacturing industry do not tend to put much time into research as they underestimate the benefit that they might and accordingly many of them do not consider it worth to contribute in. The initial intention was to have a bigger sample of 10 or even 20 companies. This goal has not been reached due to lack of responses and willingness to participate in the research surveys and interview.

Table 10: SMEs Selected

Organization Reference Name	Description
Company A	Consulting and contracting company in which one of their lines is manufacturing industry. Mainly they provide IT expertise to solve any problem and manage projects.
Company B	Telecommunication company providing IT services and project managing to manufacturing industry and other industries.
Company C	Telecommunication company providing IT services and project managing to manufacturing industry and other industries.
Company D	Telecommunication company providing IT services and project managing to manufacturing industry and other industries.
Company E	Consulting and contracting company in which one of their lines is manufacturing industry. Mainly they provide IT expertise to solve any problem and manage projects.

Each of the organizations has been chosen with the criteria outlined in section 4.2.1 of this document. Each organization falls into the broad umbrella of the manufacturing industry, however, the organizations all fit into a variety of sub-category industries. Each of the chosen organizations can also be categorised as an SME based on the definition set by the European Commission (2017). Table 11 gives a comparison between each of the organizations with detailing how each organization fits the outlined criteria.

Table 11: Organization Criteria Breakdown

Organization Reference Name	**Geographic Location**	**Manufacturing Industry**	**Involvement in IT Projects**	**IT projects performed by company**
Company A	Ontario (Canada)	Related	Yes	12
Company B	Ontario (Canada)	Related	Yes	70
Company C	Ontario (Canada)	Related	Yes	14
Company D	Ontario (Canada)	Related	Yes	22
Company E	Ontario (Canada)	Related	Yes	25

A breakdown of the criteria for each project manager can be found below in Table 12. It was important to confirm that all project managers involved fit within the sample selection criteria in order to have valuable inputs to this research work.

Table 12: Project Manager Criteria Breakdown

Project Manager Reference Name	**Involvement in Manufacturing Industry**	**Involvement in IT Industry**	**IT Projects performed by Project Manager**	**Project Length** (3 weeks to 6 months)	**Team Size** (minimum of 3)
PM - A	Yes	Yes	10	Yes	Yes
PM - B	Yes	Yes	18	Yes	Yes
PM - C	Yes	Yes	11	Yes	Yes
PM - D	Yes	Yes	15	Yes	Yes
PM - E	Yes	Yes	13	Yes	Yes

4.3 Surveys, Interviews, and Business Case Studies

In the following sections, the primary research methods employed will be discussed in detail. That includes the surveys handed out to the chosen project managers, the interviews performed with each project manager, as well as the business case studies identified by the project managers. The use of these three methods to obtain primary data was done in order to reveal elements of the research through first-hand accounts by practicing project managers. The aggregation of these responses will give information of the connection between project management and leadership, the connection between project management and project success, an indication of the top ten leadership factors and how they are connected to one another, as well as the importance of each of the ten leadership factors to the five project phases.

To ensure that the meaning of each leadership factor would not overlap with any of the other leadership factors, a number of steps were taken throughout both identifying factors and explaining them during interviews. The first step was taken while we were conducting preliminary research on the various factors that existed and had been used in past research papers. Since there were a number of different sources that had conducted research and identified leadership factors, there were many leadership factors which were similar or had overlapping meanings. Thus, when compiling all of the research, any overlapping factors were pooled together and considered a single factor for our own research purposes.

In addition, during this research stage, we took measures to ensure that the sources we were using in our secondary research were trusted sources. Taking research documents that had been published in academia, or from reputable organizations in the business world, was done so that the information gathered, including the leadership factor definitions, could be reasonably trusted. It was also ensured that definitions of factors were found that were clear and descriptive, which sometimes required combining definitions from multiple sources. When writing out the definitions for factors, multiple individuals reviewed what had been written to confirm that they were clear and did not overlap with one another.

During the interview stage, to make sure that the meanings did not get misconstrued or confused by the interviewees, three measures were taken. These measures were also used o clarify and ensure accurate transmission of the meaning of all terms used in this research, including the meaning of the leadership impact on project success. The first measure was to

provide the interviewees with a written document explaining each of the leadership factors definitions in detail and other major terms. In this way, if the project managers were unsure about the meaning of a factor, it was easy to refer to the document rather than rely on memory. The second measure taken was to conduct a call with each interviewee prior to having them fill the first survey. This allowed the interviewees to clear up any confusion they may have had and ask any questions directly to the researcher. The third and final measure taken was to provide the interviewee with a high-level short definition of major terms and of each of the 10 leadership factors during the interview. This is to help them quickly read while answering any of the questions during the interview in case they have forgotten the meaning of one of the leadership factors. The intent here was to make it easy on the interviewee to read a short definition during the interview rather than refer to the detailed document that contains long description of each leadership factor.

4.3.1 Surveys

Two surveys were given to project managers to fill out (see Appendix I – 1st Survey (Before the Interview) and Appendix II – Interview Transcripts). The target audience for the survey is a very busy subset of individuals who have a lot of competing demands on their time, therefore the surveys are both short and easy to fill out to ensure participation. The surveys used a Likert-scale (1-4). A Likert scale is a close-ended, forced-choice scale that gives the participant several choices to choose from ranging from one extreme to another. It comes in different forms, the most used form is the one with five choices starting at one end with "strongly agree" and ending at the other end with "strongly disagree," with less extreme choices in the middle. Another form is having four choices instead of five which is the one that has been chosen to be used in this research. The four-points Likert scale is also called a forced Likert scale since the user is forced to form an opinion from a list of less choices. And it has been used in this research to get specific responses from all the participants. The nature of this research requires clear answers in order to form up a clear result according to the participant's answers which they are required to give based on their practical experiences in their companies. The values of the Likert scale that were used in this research are "Strongly Agree", "Agree", "Neutral", and "Disagree" in the 1st survey, and "Very Important", "Important", "Neutral", and "Not Important". It was made clear to the project managers that

choosing “Neutral” would mean that the answer is yes but it depends on the specific situation, circumstances, and some internal or external factors.

The first survey was given out before the interview and comprised of a single question (see Appendix I – 1st Survey (Before the Interview)). Project managers were given a list of 20 leadership factors that, according to the literature, had a positive impact on projects and project success. They were asked to give each leadership factor a rating in a Likert-scale fashion based on whether they agreed with each identified factor having an impact on project success. The total amounts for each of the leadership factors were added up from each of the project managers and those with the top ten highest scores were identified. The goal for this survey was to identify that the top ten leadership factors from the literature review were in fact the most impactful according to project managers actively participating in the field.

The second set of survey questions was asked during the interviews (see Appendix III – 2nd Survey (During the Interview)). These once again consisted of Likert-scale type rating systems, this time for the importance that each leadership factor played within each project phase. The rating system was once again quantified as 1-4, this time with the numbers corresponding to not important – very important. As the second survey was performed during the face to face interviews with the project managers, the interviewer was able to ensure that project managers understood the questions being asked. The goal of this survey was to identify the differences in employment of leadership factors between the project phases, again based on real-world experience from project managers.

Both surveys were structured simply, with boxes next to each leadership factor, for room to indicate the qualitative closed-ended answer they identified for each leadership factor. Once every project manager had filled out the survey or performed the interview, in the case of the second survey, the data was compiled together in two tables for each set of answers (see Appendix I – 1st Survey (Before the Interview) and Appendix III – 2nd Survey (During the Interview)). The first table style (Table 21, Table 23, Table 25, Table 27, Table 29, Table 31) included the qualitative closed-ended responses for each project manager. The second table style (Table 22, Table 24, Table 26, Table 28, Table 30, Table 32) was laid out identically, except instead of the qualitative answer, the corresponding number value was indicated in each box as well as the totals for the leadership factors across project manager answers.

4.3.2 Interviews

One of the research methods that was used to serve the aim of this research was interviews. Within the interviews, as mentioned above, there was a survey question. The other interview questions are all open-ended questioned, each with a rough amount of time allotted (see Appendix II – Interview Transcripts). Each, of the 7 total questions (including the survey question section), had the purpose of analysing a different one of the themes identified for the research. At the end of each interview, the interviewee was welcomed to shed the light on any other leadership factors that was not among the 10 discussed ones. In total, interviews are to last between 45 minutes to an hour long, per project manager. Moreover, the interviews and the surveys layout and content were pre-tested by having individuals with research experience as well as project management experience to review its details and suggest changes. There was also a possibility of changing the interview layout and content after each conducted interview, but there was no need for the change. This was conceived from the satisfaction of the interviewed project manager and the fact that the results of each interview were supporting the research work already.

The first three questions were about defining different terms and were aimed at addressing the three different subsections of the first research theme which was to gain an understanding about project success, project management, and leadership in a project management context. The fourth question is where project managers were asked to talk about the interconnections between the ten leadership factors and how these interconnections might be beneficial to a project. This addressed the third identified theme to the research which was about understanding the interconnections between leadership factors and their impact on project success. The fifth question asked the project managers to discuss the impact that employment of leadership factors has on project success. As an option, this question could be expanded to include the description of a business case relating to how certain leadership factors were beneficial in the case. Three project managers opted to describe a business case. This question also connected to a theme, this time regarding the fourth theme which related to the importance of leadership factors on project success. Finally, for the sixth question, the project managers were asked to describe the culture present in each of the five identified project phases. This question aimed to shed light on the fifth theme for the research which was about how the culture of a project phase would impact the leadership factors most beneficial to

employ. The seventh question was to fill out the second survey (see Appendix III – 2nd Survey (During the Interview)). The interview ended by welcoming the project manager to speak about any other leadership factors that was not mentioned or was missing.

4.3.3 Business Case Studies

For this research study, it was decided that business cases should be involved as a way to ensure that there was a 'real-world' situation to draw information from. Project managers were able to voluntarily expand question five in the interview to fit this, by giving an overview of a business case study that pertained to a problem that occurred in a project that was solved through the employment of leadership factors to the benefit of the project's success. Three of the project managers opted to do this and so a business case was identified for the Planning Phase, the Execution Phase, and the Monitoring and Controlling Phase. The entire idea behind developing a study to focus on primary data collection was to close knowledge gaps and identify that the literature was in fact on the right track with regards to the importance of leadership and leadership factors in project management. By including business case studies, practical scenarios were able to be analyzed, along with the information gained from the other interview questions.

Developing and studying business cases is an additional step in the research project but should not be underestimated. Business cases provide many added benefits to the research process that otherwise would not be realised. Business case analysis allows the project manager and project team to determine if, when, and why, a particular performance-based approach should be implemented (Randall, Brady, & Nowicki, 2016). Because of this, business cases should be developed and analysed prior to the approach of interest being employed in a project. The Business cases should essentially be used as decision support tools (Randall et al., 2016).

The Business case should outline benefits and consequences associated with each business decision in question (Schmidt, 2004). While it is most often used as a business decision support tool for projects, it does serve other purposes as well (Schmidt, 2004). For starters, the business case acts as a practical guidance for managing projects as well as other business lifecycle decisions (Schmidt, 2004). As a guidance tool, analysing business cases helps to reveal key success factors that may come into play during a project, as well as contingencies that

need to be monitored to keep targets on track (Schmidt, 2004). Guidance from the business cases can be provided for a wide variety of topics and areas, including cost factors, risk elements, and options for solving problems (Randall et al., 2016). The difficulty being that business cases do not always follow a completely standardised formula (Randall et al., 2016).

Another benefit provided by business cases is that they can act as early warning systems for various issues in a project (Schmidt, 2004). Rather than waiting until the project commences to discover risks or complications and figuring a way to solve them at that point in time, developing business cases for potential problems in advance can serve as a preparation for when the issue appears. Of course, with this benefit, it is necessary for prior experience be utilised to ensure that the business case problems being developed are relevant and have a real chance of occurring. Without this background knowledge, the benefit of the business case is significantly lowered.

Developing business cases also provides a sense of accountability to a project (Schmidt, 2004). If a superior is looking at the decisions made for a project, and the project manager first developed and analysed business cases to provide proof for their actions and decisions, the project manager is regarded with a higher level of responsibility (Schmidt, 2004). This being said, it is important to keep in mind that the scenarios depicted in business cases prior to their implementation are not being developed solely with the tangible budget, business plans or reports (Schmidt, 2004). Business plans also require the project manager to make assumptions, judgements, and create plausible scenarios, without having first witnessed them occur (Schmidt, 2004). It is crucial then, that the project manager be operating with background knowledge and experience that will lend itself to making well-informed estimates and assumptions about a scenario that may impact the project.

Another benefit of developing and analysing business cases is that they are useful for depicting issues throughout the project lifecycle (Schmidt, 2004). They can be used to aid project managers in the planning phase just as easily and successfully as they can be used for the monitoring and controlling phase. This is due to the flexibility of business cases and therefore their ability to be subtly changed as needed, to better fit a different purpose and project lifecycle point.

Even during the implementation phase, developing a business case can be critical. During this phase, the purpose of developing a business case is to get the go-ahead from superiors for an

idea or project. The benefit of implementing a business case during this phase has never been more apparent than in the famous us for corporate social responsibility. Business cases for social responsibility have been developed across industries in order to promote environmental and social responsibility within organizations (Panwar, Nybakk, Hansen, & Pinkse, 2017). Businesses are driven by monetary benefits and without a business case, the monetary and company specific benefits of social and environmental welfare would never see the day in many companies (Panwar et al., 2017). Instead, the development of a 'business case for social responsibility' has an entire field of research devoted to identifying the benefits of implementing a variety of different social and environmental practices and policies within organizations. Clearly, the benefits of utilising business cases can be seen when one looks to an example of a business case that has had such an over-arching impact on the corporate and industrial climate.

5. LEADERSHIP FACTORS

In this chapter, the leadership factor selection process will be discussed in depth. A literature review was previously performed, and now this information has been compiled to develop a guide for the most important leadership factors for project managers to employ throughout a project's lifecycle in order to bring the project to a successful completion. Each of the ten leadership factors will be identified and a short description provided. A more in-depth description and discussion on each leadership factor will follow. Finally, the interconnectedness of the leadership factors will be deliberated.

5.1 Selection of Leadership Factors

Through a comprehensive literature review, a number of leadership factors were identified as key components to project management and project success for SMEs. The literature review explored a wide range of research studies, news articles, and business experts' surveys to uncover which leadership factors were the most effective in SMEs.

Information available on leadership, projects and project success, as well as effective management styles, was often directed towards large enterprises. This made searching for information that pertained specifically to SMEs problematic. Some key reports, such as The Standish Group's report, were helpful in directing searches and granted a starting point for external searches and key words to seek out in databases. Some reports that pertained to larger organizations were also included as supplemental information since similarities between SMEs and large enterprises do exist. Based on the information gathered on larger enterprises, in combination with the available information on SMEs exclusively, a thorough literature review was performed, and a number of leadership factors were found to have more prevalence.

These factors were chosen based on the sources where they came from, the prevalence of the factor in the reviewed literature, and personal experience with leadership. Some sources outlined what they thought were the most important leadership factors and these were described in the literature review in descriptive lists. Other sources, however, focused on project management and the factors listed were therefore indirectly linked to leadership through the lead role that project managers are presumed to take. Both factors geared

towards leadership and towards project management were incorporated into the Key Leadership Factors that will be used in this research to study the sample.

In Table 13, the selected factors have been outlined with short descriptions to expand on what is entailed for each. In the descriptions, sources have been cited, with some factors came from multiple sources. For those that only have one source cited, it was a comprehensive source and/or personal experience may have played a deciding role in its importance. Altogether, ten leadership factors were settled on to work with when interviewing sample companies.

The ten leadership factors selected cover a variety of values and responsibilities deemed appropriate for someone in a leadership role. This includes values such as teamwork, work ethic, motivation, and recording details to name a few. Although some of the factors overlap slightly in terms of which portion of leadership they impact. This overlap is negligible when one considers the importance, they each add to the merit of a leader.

5.2 The Leadership Factors

As mentioned in section 5.1, the leadership factors that were chosen have been laid out in Table 13. One column contains the name that this leadership factor was given, and the corresponding box in the second column contains a short description of the factor. More in-depth descriptions for each factor will be mentioned below the table in subsections.

Table 13: Leadership Factors

Leadership Factor	Short Description
Integration (Ideas and Team)	The ability to take into account the ideas and perspectives of the team members at all levels of the system throughout the project's life and into the development of the final solution (PMI, 2017d). Integration also includes the integration of the team in terms of bringing together individuals who come from a variety of different backgrounds and stances into a cohesive group.
Balancing Objectives	The ability to find a balance to the project's varying objectives. This can include finishing the project on time and on budget, finding a useful solution, ensuring all stakeholders are satisfied, and providing high quality work. Projects and Teams may also have multiple goals in terms of the project itself, which is another layer to balance (Hajiagha et al., 2014).

Leadership Factor	Short Description
Systematic Information Capturing	The ability to catalogue the project – what worked, what did not work, what steps were taken throughout the project, the process that was employed, which projects ultimately failed and how. This skill also includes follow-through engagement with all of this catalogued data when new projects are started (The Standish Group, 2013). Often the actual information capturing is something leaders will delegate, however, the intention and the active review for future projects is key. In our current era, full of changing consumer preference, constant competition, and technological advances, knowledge management is key for companies (Nowacki & Bachnik, 2016). Creating a system of capturing relevant information throughout project lifecycles is a crucial knowledge management tool. In addition, projects often fail to generate effective and complete 'lessons learned' post-mortem reports on projects (Pan, Pan, & Newman, 2007). Without this, ineffective practices will be carried forward in future projects undertaken by the organization (Pan et al., 2007). The first step to avoiding this issue is through capturing accurate information throughout the project lifecycle, so that it can be used to write up a useful report.
Commitment to the Project	Good leaders should not only be committed to the project, but they should believe in the project's success. If they are not fully behind the project, the team may pick up on this and lose interest or belief in the project as well (Szczepańska-Woszczyna & Kurowska-Pysz, 2016).
Motivational	This is the idea of inspirational motivation where leaders are able to develop and articulate a vision and express it in a way as to motivate the team to provide their highest quality of work (Wang et al., 2011).
Innovative	Innovation encompasses a variety of actions, thought processes, and qualities which together move forward and add value to projects when employed properly (Maladzhi et al., 2012).
Idealized Influence	This is essentially acting as positive role models who act in ways that conform with the ideals of the project and its goals and perceived values (Wang et al., 2011).
Fast-action Decision Making	Leaders should be strong decision makers, who have good judgement so that decisions are well thought out (The Standish Group, 2013). In addition to strong decision-making skills, they should also be able to make decisions quickly when it is required and think on their feet (Maladzhi et al., 2012).
Intellectually Stimulating Team	The ability to stimulate the team thought processes and ideas so that they are able to challenge assumptions (Wang et al., 2011). In another words, the idea of having a positive and an effective atmosphere of thoughts between team members.

Leadership Factor	Short Description
Individualized Consideration	This is the ability to recognize each team member as the unique individual they are, and to use these individualities to the advantage of the project. Utilizing their strengths and weaknesses, treating them as individuals, and involving them in the project in different ways so that they feel pertinent to the success of the project (Wang et al., 2011).

5.2.1 Integration (Ideas and Teams)

At a very basic level, Integration is about being able to incorporate various features together. For a project, this means a variety of different things, namely ideas and perspectives of team members, as well as team members themselves. Projects are very much team based, and so the individuals involved play key roles in the execution and success of a project. It is the responsibility of the project manager, who acts as the leader of the project, to ensure that integration of team members and their ideas is done effectively to ensure that the project runs smoothly.

Incorporation of ideas and perspectives of project members is the first way that project managers should focus on Integration. This should be done at all levels of the process through to the final result of the project (PMI, 2017d). In this way, project managers can ensure that their team members feel appreciated and are necessary to the process. By doing so it also benefits the project since many good ideas that the project lead has not thought of will come from their subordinates.

Incorporation of the team is also a critical responsibility of the project lead. Team work is never easy, especially when it is a group of individuals from a variety of different backgrounds, both in expertise and life. Due to the collaborative nature of projects, it is often the case that individuals from different sectors of a business will be brought together to solve problems. While all of these different perspectives on an issue are incredibly useful, it is sometimes problematic to get these individuals to work together cohesively. Therefore, the project manager must find ways to bring the team members together so that the project can function properly and run smoothly.

Integration ties in to some of the other identified leadership factors as well. The most obvious way that integration is connected to the other leadership factors is through incorporation of other's ideas. This will be expanded on in the sections outlining the factors of motivation,

Idealized Influence, and Intellectually Stimulating Team members. Integration of team members' ideas ties into these other factors because they work together to achieve a goal. Team members need to be motivated, use their critical thinking skills, and have positive role models for them to follow suit with idea formation.

For project team members to suggest ideas, they need to feel that what they are saying will not only be appreciated but will have the chance to be used in a meaningful way in the project. This is one reason why Integration of team members' ideas is so important. Incorporating their ideas is also a pertinent part of motivating them, as once again, they will feel more motivated if they know that what they do and say will make a marked difference, which means also that the project manager is giving them an Individualized Consideration. Finally, Integration works both ways for Intellectually Stimulating Team members. By guiding them to think more critically, leaders are ensuring that the ideas their subordinates come up with will be more evocative and valuable to the project. By offering the opportunity to incorporate team members' ideas into the final outcome of the project, the team lead is challenging them to think more critically so that their ideas are beneficial.

5.2.2 Balancing Objectives

Projects comprise many different moving parts that eventually will work together to create an end product or solution. In the interim, however, it means that there are a lot of varying objectives that need to be dealt with, often multiple at a time (Hajiagha et al., 2014). With limited resources, and limited time, a project lead has to balance all of these objectives to ensure that they all get done and that they all get the necessary attention (Hajiagha et al., 2014). A diagram of the three layers of project objectives is presented in Figure 10.

Not to forget the numerous objectives of the final result of the project. The first layer of balancing includes that the project should be finished on time and on budget (Hajiagha et al., 2014). The second layer mainly comprises of two portions: The project should come up with a useful solution, that works for the company in practice, as well as, theoretically; the project stakeholders should all be satisfied with the result and with the quality of work that was done on the project (Gemünden, 2015). All of these pieces work together towards the main objective of finishing the project, but they are all pieces that a project manager has to balance.

The third layer of Balancing Objectives comes in the form of the goals of individuals working on the project and the goals of the project itself. Often team members will have goals for the project that differ from each other and differ from the goal that the project lead has for the project. In addition, projects are often intended to solve more than one issue which leads to a need for project managers to balance these goals so that all of them are solved when the project is completed.

Figure 10: Three Layers of Project Objectives

Having multiple goals adds more layers to an already complex process with many moving parts. As such, it is often beneficial for large projects to be broken down into smaller more manageable projects. This way, many small projects will tackle individual issues and the members of those teams can focus more energy on fewer things. Once all of the projects have been completed and multiple solutions have been found, these solutions can be brought together, and a bigger picture solution achieved.

Balancing Objectives, while mostly a separate factor from all of the other chosen factors, does tie into one to some extent. It is worth noting the intricacies of the factors and the roles that play into each other. Balancing Objectives means having to make tough decisions about time and resource allocation. Since projects are often constrained on both, but specifically on time, it means that decisions about which objectives to pursue, and how to go about balancing all of the variables, have to be done quickly. Thus, there is a connection between Fast-action Decision Making and the ability to balance objectives within a project.

5.2.3 Systematic Information Capturing

As was mentioned in Table 13, this factor is about keeping track of all of the data that is gathered during the project. This includes not only data for the project, but also data about the project. Information such as how long tasks took to complete, which ideas were put forth and which of those ended up working the best should be kept (The Standish Group, 2013). Also, recording when portions of the project, or the entire project failed is useful (The Standish Group, 2013). All of this data keeps a clear record of the progression of the project and indicates what went wrong, what went right, as well as why things occurred as they did.

This factor also includes the use of all of this gathered information. It is not enough for the data to be catalogued, it must also be beneficial for future projects, otherwise there is not much point in putting all of the work on recording it. A company's innovative capacity, that is their ability to create impactful change within the organization, is linked to the knowledge that the organization possesses (Nowacki & Bachnik, 2016). This stems in part from the fact that knowledge is an important, but intangible, resource that has become increasingly important in our knowledge-based economy (Nowacki & Bachnik, 2016). One of the concepts that knowledge management systems should embody incorporates this idea of Systematic Information Capturing, in that vital data should be extracted from whatever process is being undertaken by a team (Nowacki & Bachnik, 2016). Probst, Raub, and Romhardt (2002) have touched on this idea as well when describing their knowledge management process model: They said that knowledge should be: acquired; developed; shared and; disseminated; as well as leveraged; and stored for future use. Through the lens of Knowledge management, it is apparent that the review of all of this gathered information is a crucial portion of the leadership factor.

Projects that require to deal with IS can be costly, or can fail fully or partially; this is a constant issue (Pan et al., 2007). It has been argued that one reason behind this constant failure is the lack of post-mortem reports developed in order to produce constructive feedback so that lessons can be learned from the missteps of past projects (Pan et al., 2007). The importance of gathering information throughout a project lifecycle and developing a report on the project with this information regardless of the success of the project has been reiterated by many (Pan et al., 2007). Leaders who are actively pursuing information capture in projects and who

are reviewing past projects have an edge as they are learning from past mistakes so that future projects do not get caught with the same pitfalls.

This particular leadership factor focuses more on the physical work that a leader must ensure is done, rather than focusing on the more elusive factors which do not have to do with any specific task. It is about coordination of information and the use of this information to the advantage of the project (The Standish Group, 2013). Assuming that this information has been captured, which is the case 90 percent of the time, as per The Standish Group's research (2013), the analysis of this gathered information is a logical step before beginning future projects.

The information captured can be from a variety of sources. Past projects executed by the company are a useful starting point from which managers can draw information. This can be either from projects which relate directly to the current project, projects worked on by some of the current team members, or simply projects worked on by the company, to get an idea of the company's general formula and how well it has been working. Information can also be used from other company projects, especially those that relate to the area of interest or have a number of similarities. Of course, gathering project information from outside of the company may prove difficult since many other organizations will be unwilling to give up their own data.

5.2.4 Commitment to the Project

Commitment to the Project is a fundamental part of good leadership. It is also common sense. Without the commitment of the individual leading the project, the rest of the team will not feel the need to commit to it either and the chance of it succeeding in any form is greatly diminished (Szczepańska-Woszczyna & Kurowska-Pysz, 2016). This extends not only to an outward level of commitment, to see the project through, but to a belief in the project and its ability to succeed.

Often the way to do this is for managers to be involved with projects that fit within their own values. At very least, projects should be run in a way that the leader believes is ethically and morally correct. For different individuals this will vary, and thus projects will be chosen and run the way that the leader deems appropriate. Projects that accord with a team leader's beliefs will often have a team lead who is more enthusiastic, more supportive, and more

interested in the health and success of the project. This is important as this enthusiasm can spread to the team members who will be more committed to the project as well (Wang et al., 2011).

This commitment to the project extends further than just serving as an example for subordinates. It is imperative for managers to also show their Commitment to the Project by guiding team members on the expected behaviors and procedures (Szczepańska-Woszczyna & Kurowska-Pysz, 2016). This ensures that their team members understand the reasons behind their commitment and how they themselves can positively impact the process. This guidance enables team members to become responsible decision makers as well, so that, when it is required, they are able to make informed decisions that also align with the values of the project and the project manager (Szczepańska-Woszczyna & Kurowska-Pysz, 2016).

Once again, it is clear how interconnected some of the chosen leadership factors are. Although commitment itself is very much a personal factor, it extends to others in a number of ways. First, leaders must also be good role models (Idealized Influence) so that their team members learn through example. This means that they are indirectly impacting their subordinates by changing the expected behaviors. It also impacts others through directly interacting with them to guide them through the anticipated behaviors for committed individuals.

Being a role model, i.e. Idealized Influence Factor, is not the only other leadership factor that interacts with project commitment. The idea of motivation is also captured through this factor. By outwardly expressing their commitment and belief in a project, either through actions or words, a project lead should be motivating their team members; getting them excited to work on the project because of how important they perceive it to be. Belief in a project often comes because the manager believes in the good that will come of that project, and their ability to express this through their commitment will motivate their subordinates to believe in the project as well (Wang et al., 2011).

5.2.5 Motivational

As is outlined in Table 13, this factor is about inspiring through motivation. Projects are often used to solve difficult issues, and this means that they will not always be fun to be a part of or yield straightforward solutions. Thus, a good leader knows how to motivate their team to keep them on track, working to their fullest potential. It is the ability to express the overarching

vision for the project, the end goal, in a way that stimulates support of the project, that allows the team members to work cohesively and with enthusiasm towards that end goal.

Motivation as a leadership quality is not just about motivating individuals to follow the project manager's orders and get the job done. Instead it is about motivating members to invest in the project so that they go beyond simple self-interest to working towards the collective good that the project is intended to generate (Wang et al., 2011). By focusing on the collective good that the project will bring – that end goal as it were – individuals on project teams are less focused on simply performing the tasks, instead, they put more energy and thought into doing them well.

This idea of inspirational motivation is one of the four pillars that Bass (1985) outlines as key components to strong and healthy leadership. The other three pillars have also been used as leadership factors because of the immense amount of research done by Bass, as well as many others, into their merit. Together they are termed 'Transformational leadership' and have been linked empirically and theoretically with task performance, contextual performance, and creative performance (Wang et al., 2011). This idea of transformational leadership is intended to motivate team members to do their best work. By linking the team members' work to the more meaningful bigger picture, such as a compelling vision of what the project will do to improve the company, leaders are able to motivate their team members in the roles that they have been assigned (Wang et al., 2011).

Contextual performance is a performance that contributes to organizational effectiveness in such a way as to shape the organizational, social, and psychological context of the company and that serves as the facilitator for various activities and processes within the organization (Borman and Motowidlo, 1997). Contextual performance is more impacted by the motivation factor, because it refers to tasks which are generally determined by a 'will-do' basis (Wang et al., 2011). In contrast, motivation plays less of a role in task-based roles, or those tasks that are based solely on an ability or a knowledge (Wang et al., 2011). They play a role in these tasks solely in terms of willingness to put in the time and effort to learn new skills (Wang et al., 2011). What this means for projects is that motivation by the leader of the project will play a variety of roles throughout the project lifecycle, sometimes having more prevalence, such as with contextual performance, than in other instances, such as with task-based performance (Wang et al., 2011).

This motivation is also said to raise levels of happy emotions in the followers of a transformational leader (Wang et al., 2011). This ties back into showing higher performance levels by individuals who are being led with this inspirational motivation and transformational leadership style (Wang et al., 2011). At a team-based level, the motivation aspect of transformational leadership occurs through this aforementioned communication of a vision, and motivating team members to pursue the collective goal set out in this vision (Wang et al., 2011).

5.2.6 Innovative

Innovation is about coming up with new and original ideas, and then pushing these ideas to become meaningful results. This means that innovation itself can take a number of forms, which is why it is often used in such a vague sense. To be innovative means that a leader is constantly working towards creating new solutions to problems. Projects are designed to solve problems, whether it be for the company performing it or for a client, which is what makes innovation for project leaders so crucial.

It has been found that there is a positive relationship between leadership and innovation (Rosing, Frese, and Bausch, 2011). Leaders who employ innovative thinking and who therefore influence the innovative processes happening in the businesses are seen to have increased competence as leaders (Maladzhi et al., 2012). Some of the criteria that Maladzhi et al. (2012) came up with in their research to identify innovation are: ability to ascertain external factors; fast action orientated; high gain risk taker; immersed in progressive change; inspirational and motivation; charismatic; passionate; and visionary leaders. Some of the points in the above list of criteria overlap with the leadership qualities that have been chosen for this research, which points to the interconnected nature of all of the key factors.

SMEs need innovation so that they are able to stay competitive and continue to develop (Maladzhi et al., 2012). As they do not have the same resources or reach as multinational corporations, anything they can do to get ahead is critical. Innovative leadership gets people excited, motivates them to be committed, and helps them to see the project to its end rather than giving up halfway through (Sloane, 2006). This is an incredibly useful skill for project management since it can be difficult to keep people engaged and focused on one big task, and one end goal for prolonged periods of time, such as is seen when working on projects.

It was found that innovative leaders, not only help their company by coming up with original new solutions, but they also foster innovation in their subordinates, thereby creating an innovative culture in the business (Maladzhi et al., 2012). When leaders show innovation and motivate team members to think in unique ways as well, they create an environment that is conducive to this type of out-of-the-box thinking. Then, team members feel more comfortable in their work environment and more comfortable with sharing the original solutions they have come up with (Maladzhi et al., 2012). Innovative cultures help to keep companies sustainable through the formation of valuable ideas that help the business to grow, and adapt to the ever-changing business world (Maladzhi et al., 2012).

To prove once again that all of the chosen factors work together to form great leaders, it is not enough for a leader to simply be innovative. As mentioned before, they need to motivate team members to do the same and they need to ensure that the environment they are making for their staff is one that is a comfortable and non-judgemental space for ideas. Furthermore, they need to be committed and passionate about what they are doing (Maladzhi et al., 2012). This positive attitude towards the work being done shows, and subordinates will pick up on this and mirror that energy.

5.2.7 Idealized Influence

Idealized Influence is about being a good role-model for the team members. By acting as you wish for them to act, you are setting the standard for each team member to strive for. This is key because often subordinates will do as is shown to them, not pushing any harder than the person in charge. By acting in ways that conform to the ideals of the project, team leaders have a better chance at ensuring that the people working on the project with them do the same.

Idealized Influence works most strongly at the team level according to Wang et al. (2011). This is because leaders serve as role models who their followers wish to emulate and this instils increased cooperation, team commitment and performance levels from the team. By displaying the desired behaviors and being supportive of team members who follow suit, leaders reinforce their Commitment to the Project and to the common goals of the project.

Idealized Influence does not work solely at the team level, however, it works at an individual level by inspiring team members to be harder workers and to sacrifice their own self-interest

for the interest of the project (Wang et al., 2011). By improving both the individual Commitment to the Project and the commitment of the team towards supporting each other and working together towards a common goal, leaders are able to move well-made projects forward more quickly and complete them with more cohesion.

Idealized Influence is the second of four pillars set out by Bass (1985) as a key leadership factor to creating the idea of a 'transformational leader'. Wang et al. (2011) go into detail about this idea of transformational leadership and how it positively impacts both leadership and organization performance in many different ways and on many different scales. This includes the project level scale, where teams are generally much smaller but the work that needs to be completely is constrained by time, money, resources, and is generally not a simple or straightforward task. It could be argued that projects are in fact more in need of strong leadership than many other aspects of businesses, since they are so high stakes.

5.2.8 Fast-action Decision Making

Decision making is a big part of being a leader, and plays a particularly large role with project leaders, who are constantly faced with decisions that need to be taken to achieve the best possible result for the project. Leaders who are adept at analyzing situations and reacting quickly are well suited for the fast-paced environment that is often found in projects and within SMEs. Without this ability, projects can end up taking longer than the budgeted time frame, costing the company precious time, money, and resources.

Project managers are constantly bombarded with issues that need to be solved, as well as decisions that need to be made (Walumbwa, Maidique, & Atamanik, 2014). Often, it is required that these decisions be made before any further steps can be taken. As such, projects may be partially or wholly halted until the manager has given the team a directive.

It makes it even more difficult for managers to handle these decisions in today's world, because of the incredible amount of information available. This may sound counter-intuitive but the repercussions are two-fold: first, there is too much information, so much that no one would be able to sift through it all to find only that which is relevant in a reasonable amount of time. The other reason is because it is so easier for people to access information and to access it much more quickly. Should an inappropriate decision be made, the company could

suffer more than in the past, because the public can get a hold of the issue with increased ease (Walumbwa et al., 2014).

Sometimes fast decision making can cause the 'wrong' decision to be made. This however, is arguably better than missing opportunities due to indecision holding up processes (Maladzhi et al., 2012). SMEs, due to their smaller size and generally the smaller amount of available resources, need to be able to seize every opportunity they get. Therefore, having a project lead who is too careful about decisions can actually do the company – and any prospective projects they engage in – more harm than good. Leader's need to be brave enough to take a leap of confidence and trust their own judgement (Maladzhi et al., 2012), even if they do not have all of the necessary information.

In this way, leaders need to be incredibly self-aware, if they are to be adept at making these fast-action decisions (Walumbwa et al., 2014). A good leader understands that each decision made will impact a wide range of individuals, either negatively, positively, or both. This awareness extends as well into comprehending how they themselves make decisions, what their motivations are, and their behaviors, and then using this knowledge to improve their ability to lead and make solid decisions (Walumbwa et al., 2014). Once a manager is able to understand themselves, as well as, who they will be affecting and how, future decisions will be made more quickly, when under pressure, because they already have this background information in their mind.

It is also key to note how interconnected fast-action thinking is with some of the other chosen leadership factors including innovation. Fast-action Decision Making is often a big part of innovative thinking. Decisions need to be made quickly in innovative environments, partially to take opportunities when they arise, and partially because the innate nature of innovative environments is fairly fast-paced. Moreover, this leadership factor works hand-in-hand with Balancing Objectives. A leader must relate his decision making to the objectives presented in the project, keeping in mind their prioritization and balance.

5.2.9 Intellectually Stimulating Team

This is a factor that plays into involving team members in the thought process of project execution. However, unlike some of the other factors which deal with team member involvement, this factor has more to do with pushing and encouraging team members so that

they are able to challenge assumptions and norms on their own. In SMEs, it is important to think outside the box. Having a whole team of people who are able to do this, rather than merely relying on the team lead to make decisions, means that more good ideas will emerge and be brought to the idea board when solving project problems.

This factor is another one that is discussed by Bass (1985) and is the third of the four pillars of transformational leadership. It is about empowering followers to take their own initiative and think for themselves. It is about challenging what is thought as normal, taking risks and problem solving (Wang et al., 2011). Empowering project team members to challenge assumptions and engage in out-of-the-box thinking (Wang et al., 2011) will benefit projects through the integration of a variety of different opinions and contexts, so that ideas will fuse together to generate innovative solutions.

This ability to stimulate the thought-processes of team members will ensure engagement in all aspects of the project, allowing for a more comprehensive solution at the end. It also allows for the project to be more of a conversation, rather than a set of tasks that must be followed whether they seem appropriate for the solution or not. By Intellectually Stimulating Team members, however, the leader must be prepared to also take the ideas that come out of it into consideration.

Again, the interconnectedness of some of these key factors is evident. By intellectually stimulating their team members, the manager must be ready to consider their individualities and take into account the ideas that result. It also ties into being a positive role model, in the sense that the team lead has to be intellectually stimulating himself as well. If leaders are not taking into account these extra pieces and incorporating the interconnected factors into their plan of action, they will be unable to fully harness the power of their team members, thereby decreasing the usefulness of the project.

5.2.10 Individualized Consideration

As per Table 13, Individualized Consideration deals with treating workers as unique humans with their own strengths to add to projects. Each member of the team will have different ideas to bring to the project. By considering each person as unique and ensuring that they are treated as individuals throughout the project, leaders have a better chance at fulfilling the project goals.

This is because Individualized Consideration is about more than just recognizing that they are individuals. Leaders who truly harness this factor to its full potential are able to use it to the advantage of the project. By identifying each team members' strengths and weaknesses, the leader must then use that information when delegating tasks so that each role is given to the person who will do the best job. In this way, projects will end up being done with the highest possible quality work and the quickest possible time.

The other key idea with Individualized Consideration is to make each member feel useful. By treating each team member as an individual, leaders are able to attend to the needs of their team members. By doing so, team members foster feelings of trust and satisfaction with their leader (Wang et al., 2011). It is key to have the trust of your team members when working on a project.

They need to believe not just in what they are doing, or in the project itself, but also in what their team lead is doing. Team members need to trust the judgement of the leader because ultimately, the leader is the one who will be making all of the final decisions on the project. Without this trust, and without satisfaction of the way the leader is handling everything, team members will start to put less efforts in the project, since they do not believe that the decisions being made will lead to a successful outcome.

Individualized Consideration is another of the four pillars that Bass (1985), laid out as key factors in creating strong and effective leadership. This idea of the four factors making up transformational leadership means that they are intrinsically linked. Treating each team member as an individual and considering their strengths, ideas, and needs, when working on projects, ties in to the motivation that these individuals will have throughout the different phases of their work.

5.3 Leadership Factors Interconnection

As mentioned previously, the 10 leadership factors identified in this research have some connections to each other, both directly and indirectly. While each of the identified factors are important in their own right, they often benefit each other and the project when used in conjunction with each other. Figure 11 is a visual representation of the interconnections between the 10 leadership factors. When viewed as a whole, the collective power that these leadership factors form in a project leader is evident.

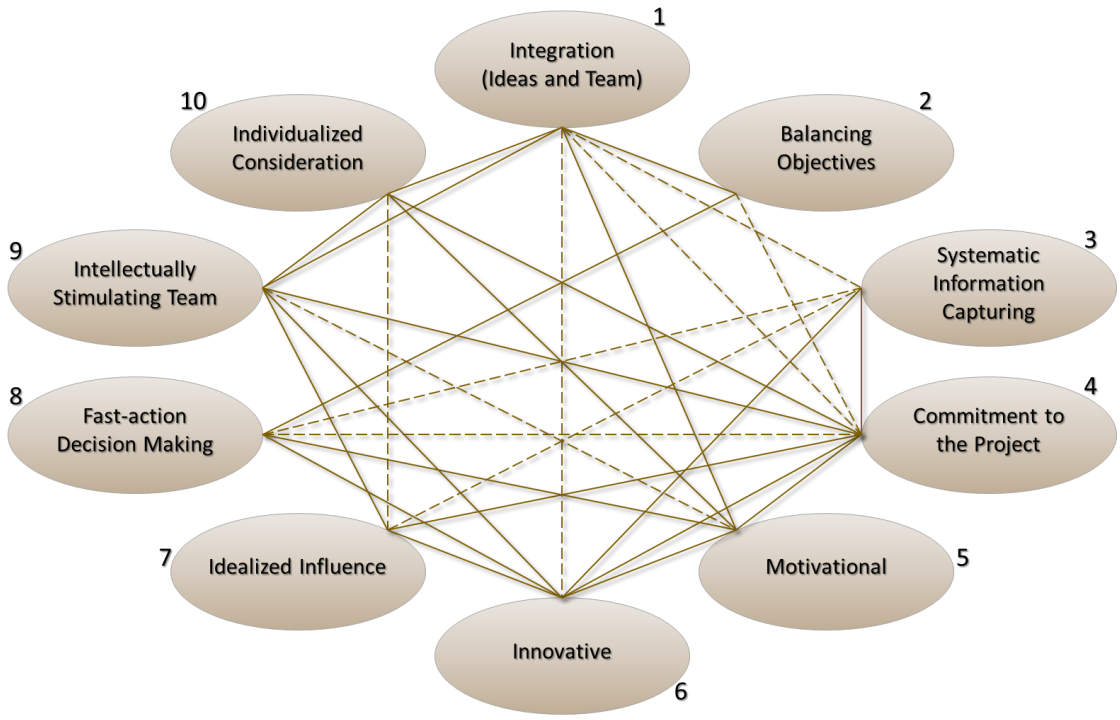

Figure 11: Interconnection between leadership factors

The following section will aim to provide context and proof for the direct and indirect connections visualised in Figure 12. While many of the interconnections have been outlined in prior literature, some of the connections were identified from first hand experiences and business cases. As has been noted numerous times throughout this research project, there are many gaps in the literature which has made it difficult to provide literary proof. As such, instances where connections were identified from first hand experiences and knowledge will be clearly stated.

Leadership Factors									
Leadership Factors	Direct Interconnection						Indirect Interconnection		
Integration (Ideas and Teams)	Balancing Objectives	Motivational	Intellectually Stimulating Team	Individualised Consideration			Systematic Information Capturing	Commitment to the Project	Innovative
Balancing Objectives	Integration (Ideas and Teams)	Fast-action Decision Making					Commitment to the Project		
Systematic Information Capturing	Commitment to the Project	Innovative					Integration (Ideas and Teams)	Idealized Influence	Fast-action Decision Making
Commitment to the Project	Systematic Information Capturing	Motivational	Innovative	Idealized Influence	Intellectually Stimulating Team	Individualized Consideration	Integration (Ideas and Teams)	Balancing Objectives	Fast-action Decision Making
Motivational	Integration (Ideas and Teams)	Commitment to the Project	Innovative	Fast-action Decision Making	Individualized Consideration		Intellectually Stimulating Team		
Innovative	Systematic Information Capturing	Commitment to the Project	Motivational	Idealized Influence	Fast-action Decision Making	Intellectually Stimulating Team	Integration (Ideas and Teams)		
Idealized Influence	Commitment to the Project	Innovative	Intellectually Stimulating Team				Systematic Information Capturing	Individualized Consideration	
Fast-action Decision Making	Balancing Objectives	Motivational	Innovative				Systematic Information Capturing	Commitment to the Project	
Intellectually Stimulating Team	Integration (Ideas and Teams)	Commitment to the Project	Innovative	Idealized Influence	Individualized Consideration		Motivational		
Individualized Consideration	Integration (Ideas and Teams)	Commitment to the Project	Motivational	Intellectually Stimulating Team			Idealized Influence		

Figure 12: Direct and Indirect Interconnection between Leadership Factors

Starting with the Integration, of both ideas and the team, this leadership factor has many connections to other identified leadership factors. The strongest connections noted were with the leadership factors for motivation, Balancing Objectives, Individualized Consideration, and Intellectually Stimulating Team. More indirect connections were noted with Systematic Information Capturing, innovation, and Commitment to the Project. Integration is itself a balancing act, requiring compromises and coordination to be made (Brentani & Kleinschmidt, 2015). In this sense, balancing of objectives becomes an incredibly useful leadership factor to employ in conjunction with Integration. In the same sense, Integration will go much more smoothly if each team member is considered individually, their strengths and weaknesses used to the advantage of the team as a whole. By recognising that each team member is a unique individual, the project manager can use this leadership factor to shape how teams will be integrated and who will take what roles. Finally, motivation plays a large part in integrating teams. Working in groups is almost always a difficult task, where disagreements or having to work with a problematic person can easily discourage teams or individuals from continuing to integrate their ideas and skillsets. This is a well-known fact and has been experienced first-hand by numerous people involved in this research project. To prevent discouragement, project managers should make use of the Motivational leadership factor to motivate employees to work together, solve problems, and integrate themselves and their ideas. Intellectually Stimulating Team is also important with regards to Integration. It is crucial to recognise the differences team members possess so that those differences can be capitalised on when the team is being integrated, their knowledge banks used, and their ideas combined.

More indirectly, Systematic Information Capturing relates to Integration as it is necessary to have captured the required information in order for there to be anything to compile and integrate. This is common sense – if you have no data you cannot compile data. Further than this though, it is useful to have a system to capture this information so that it is clearly laid out and organized for when it needs to be integrated. Innovation may be required for coming up with ideas as to how to integrate teams and information, especially if there are circumstances that make it particularly difficult, such as conflicting ideals among team members. As is important with every other leadership factor, and as will be discussed further later on, if a project manager is not committed to the project, many of these leadership factors

will go unused as they require a greater effort and an attachment to the project's successful outcome than the project manager is able to supply.

Moving on to Balancing Objectives, interconnections not previously noted were with Fast-action Decision Making and Commitment to the Project. The connection between Fast-action Decision Making and Balancing Objectives has a direct connection while the connection Balancing Objectives has with Commitment to the Project is more indirect. During the execution phase, when Balancing Objectives comes into the spotlight in terms of importance, there are a lot of conflicting objectives and tasks that need to be done within a set time frame (Hajiagha et al., 2014). While the numerous tasks requiring attention from the project manager point to a need for the Balancing Objectives leadership factor, the timeframe intertwines the need for Fast-action Decision Making skills from the project manager as well. Once again, Commitment to the Project has an indirect connection to this leadership factor as it is a supporting factor that helps to motivate the project manager to put the extra time and energy into developing and using these leadership factors.

Next is Systematic Information Capturing which, in addition to Integration, has indirect connections to Fast-action Decision Making and Idealized Influence as well as direct connections to Commitment to the Project and innovation. To start with the direct connections, a company's innovative capacity is highly linked to the knowledge that the company has accumulated over the years (Nowacki & Bachnik, 2016). Systematic Information Capturing is one of the key ways in which companies can gather and share information which is translated into a knowledge base that can be drawn from when innovating. In terms of Commitment to the Project, it has been mentioned previously that Systematic Information Capturing is a tedious step in the monitoring and controlling phase, part of what contributes to this phase performed incompletely or neglected all together. This was noted in one of the business cases discussed earlier. Because of this, Commitment to the Project is of incredibly high importance, as without it, Systematic Information Capturing is not a priority and therefore will not be done well or at all.

With regards to the indirect connections, information should be captured throughout the project's lifecycle, and Fast-action Decision Making may come into play when recording information becomes an added demand on time. This was something occasionally experienced during projects once the monitoring and controlling tasks became necessary.

Decisions about what to record, how much to record, and when to record it in relation to other key activities will all require some degree of Fast-action Decision Making. In terms of an indirect connection to Idealized Influence, the premise is simple: as a project manager, showing the team what is expected of them by leading by example (Wang et al., 2011). Recording information is important but having a role model to follow will add an extra layer of accountability to that importance.

In terms of the connections with regards to the leadership factor of 'Commitment to the Project', this leadership factor is seen to be linked to each of the other nine leadership factors. Some with a more direct link: Systematic Information Capturing, Intellectually Stimulating Team, Idealized Influence, Individualized Consideration, innovation, and Motivational; while others have a more indirect link: Balancing Objectives, Integration, Fast-action Decision Making. Simply put, the project manager needs to be committed to the project. Without this underlying commitment, the project manager has no driving force to utilise any leadership factors to improve the chances of success of the project. Without a sense of Commitment to the Project, the project manager might as well not be a part of the project at all, as this lack of enthusiasm for the project may in fact hinder its success because the lack of enthusiasm or drive will spread to the rest of the project team members as well, dooming the project (Szczepańska-Woszczyna & Kurowska-Pysz, 2016).

For the Motivational leadership factor, those interconnections not yet mentioned include direct links to innovation, fast-action oriented, and Individualized Consideration, and an indirect link to Intellectually Stimulating Team. In terms of the direct links, it was pointed out earlier that contextual-based tasks are more impacted by motivational factors than are task-based factors (Wang et al., 2011). This is why innovation has such a key link to motivation, because innovation is a very contextual factor that is needed in many situations throughout a project lifecycle where team members are required to think up solutions. Motivating the team members by helping them to see the bigger picture, and how they can impact the outcome of the project and therefore impact the company, is an immensely useful driver for fuelling ideas. This was reiterated by Maladzhi et al. (2012) as motivational behavior that was one of the criteria they discussed as key to identifying an innovative leader. In terms of the fast-action oriented leadership factor, another one of the criteria Maladzhi et al. (2012) put out as qualities that make an innovative leader was the ability to make fast action decisions. As for

Individualized Consideration, this is one of the four pillars that Bass (1985) created to achieve effective leadership. One of the other four pillars was inspirational motivation, representing that these two leadership factors have been grouped together by field experts in roles supporting each other for decades. As can be seen, these qualities are all highly interconnected and support one another immensely.

The only indirect link not yet discussed involving the leadership factor of motivation is the link to Intellectually Stimulating Team. This leadership factor is in fact the third pillar of Bass (1985)'s four pillars representing transformational leadership, once again showing the supporting role it plays with motivation and fast-action thinking. It is a factor devoted to empowering team members to take initiative, problem solve, think critically, and take risks (Wang et al., 2011). As such, it has the added link to motivation in that it acts as a motivational force to empower the team.

Next, looking at innovation, the remaining connections are all direct links between innovation and Idealized Influence, Fast-action Decision Making, and Intellectually Stimulating Team, and Individualized Consideration. As a concise way of putting it, innovation is needed on occasion to support all of these other leadership factors because when issues arise or new challenges within these leadership factors present themselves, the ability to innovate is crucial for the project manager to keep moving the project forward.

Moving forward to Idealized Influence, additional links between this and other leadership factors include a direct connection to Intellectually Stimulating Team and an indirect connection to Individualized Consideration. As mentioned previously, both Idealized Influence and Intellectually Stimulating Team are pillars used by Bass (1985) in his description of how to achieve transformational leadership. This is key to note as their interconnected nature and the supporting role they play for each other in the research performed by Bass still holds true. Idealized Influence and Intellectually Stimulating Team go hand in hand as they both aim to influence the project's team members and motivate them to actively work on achieving project success. Individualized Consideration fits nicely with the other two leadership factors, but specifically to Idealized Influence, as it is also one of Bass's four Pillars (Bass, 1985).

Finally, the last connection not yet touched upon while the focus was on other leadership factors, is the direct link between Intellectually Stimulating Team and Individualized Consideration. In addition to both being pillars in Bass's transformational leadership criteria,

when aiming to intellectually stimulate the team it is helpful to have a grasp on understanding the individual qualities of each of the team members and take these differences into consideration when looking for ways to intellectually challenge each of the team members.

5.4 Other Leadership Factors

Of course, these ten leadership factors mentioned in previous sections should not be seen as the be-all and end-all of factors. There are a multitude of other factors that have been discussed throughout the literature with regards to what makes a good leader. Since there are so many other factors that could have been included, another ten leadership factors have been identified from the reviewed literature and will be discussed presently. The other ten leadership factors are as follows.

1. Emotional Maturity;
2. Ascertain External Factors;
3. Risk Taker;
4. Change Maker;
5. Business Knowledge and Literacy;
6. Problem Solving;
7. Customer Service Orientation;
8. Flexibility and Adaptability;
9. Communication, Interpersonal skills;
10. Visionary leader.

In depth descriptions of each of the leadership factors listed above will be discussed, along with the proof provided by journal articles and research papers written on the topic. Table 14 can be viewed for the concise definitions of each of the leadership factors.

Table 14: Additional Ten Leadership Factor Descriptions

Leadership Factor	Definition
Emotional Maturity	The ability to be socially- and self-aware, and to have the ability to manage relationships with oneself and others (The Standish Group, 2013).

Leadership Factor	Definition
Ascertain External Factors	The ability to be aware and sensitive to the surrounding environment, including the uncertainty involved with many of the external factors (Maladzhi et al., 2012).
Risk Taker	The ability to be able to think outside of the box and take calculated risks (García-Granero, Llopis, Fernández-Mesa, & Alegre, 2015).
Change Maker	The engagement in progressive change and an ability to help spread this innovation throughout the organization (Maladzhi et al., 2012; Rucci et al., 1998).
Business Knowledge and Literacy	The ability to align a project to the greater picture of the organization and an understanding of the core business strategy and the company (Clarizen Group, 2017).
Problem Solving	The ability to solve issues that projects present as well as foster problem-solving abilities in the project team members.
Customer Service Orientation	The ability to keep the end user of the project output in mind when developing the output.
Flexibility and Adaptability	The ability to adapt and change course with regards to approaches and methods throughout the project lifecycle to stay in step with the changes that occur throughout a project.
Communication and Interpersonal Skills	The ability to clearly communicate ideas and facilitate clear communication within the project team and with external stakeholders (The Standish Group, 2013).
Visionary Leaders	The ability to inspire team members to achieve the goals and aspirations set forth by an organizational or project vision (Maladzhi et al., 2012).

The first additional leadership factor identified was Emotional Maturity. This leadership factor was previously discussed as one of the factors that The Standish Group provided as success factors for the completion of projects. While they talked about the emotional maturity of the team as a whole, as well as of the general working environment of the project, it was noted that the project manager's grasp on emotional maturity in particular is key (The Standish Group, 2013). Emotional maturity is about how projects get resolved within the company's

ecosystem, with healthy ecosystems, and therefore higher emotional maturity, resulting in a greater number of successful projects (The Standish Group, 2013). A lack of emotional maturity has a serious negative effect on the project environment, so improvements in this area are key (The Standish Group, 2013).

According to The Standish Group (2013), emotional maturity is about being self-aware, socially-aware, and having the ability to manage oneself and relationships with others. The Standish Group (2013) talks about how a project's emotional maturity requires the management of the project's perceived and actual outcomes, as well as management of the project team's individual and collective emotional maturity. This points strongly to emotional maturity being a factor that the project manager has a large influence on, with their personal mastery of it as well as their ability to foster it within team members playing a role in the health of the project environment and therefore the project's chance at success.

The second additional leadership factor to be discussed is the ability for project managers to ascertain external factors. This deals with a number of different things throughout the project, but essentially, the project manager has to be sensitive to their environment and aware of the impact that they will have on those surrounding them (Maladzhi et al., 2012). In addition, project managers need to be aware of the uncertainty involved in projects and must be able to deal with this uncertainty (Maladzhi et al., 2012). Project's contain a lot of uncertainty, and it is important for project managers to limit this uncertainty as much as possible by thoroughly researching all of the various factors of importance. More than this though, project managers should be able to foster a culture of participation and ownership of knowledge and skills in their team members to further improve their ability to discover and deal with external factors (Maladzhi et al., 2012).

For SMEs, there are a lot of factors outside of the organization and often outside of the control of project managers that can impact the project (Maladzhi et al., 2012). Because of this, the ability to ascertain these external factors becomes even more crucial for project managers operating within SMEs, as the increased impact of external factors can mean that a lack of knowledge of one factor can lead to the failure of the project. Sometimes these external factors can even be leveraged for the creation of new ideas and innovations, another reason why a project leader should be hyper aware of the external factors surrounding the business and project environment (Maladzhi et al., 2012).

The third additional leadership factor is the ability for the project manager to be a risk-taker. This factor ties well into the employment of the second factor mentioned, as the tolerance of uncertainty (mentioned with regards to ascertaining external factors) allows for the ability of increased risk-taking (Maladzhi et al., 2012). Risk-taking has been linked in various fields to innovation, one of the original ten leadership factors. Further, it has been linked to importance in management from a variety of perspectives including in literature devoted specifically to leadership (García-Granero, Llopis, Fernández-Mesa, & Alegre, 2015). Essentially, risk-taking, when it comes to people in a position of leadership, refers to the investment of significant resources to activities that have a high chance of failure, but which also have high-gain rewards should they succeed (García-Granero et al., 2015).

With projects, where innovation is crucial for change, out-of-the-box thinking and risk-taking are of high importance (García-Granero et al., 2015). While not all project managers will employ the same level of risk-taking, and different projects may require less of it, as a general rule, projects need innovation which means they need a leader who is willing to take risks to achieve results (García-Granero et al., 2015). Of course, leaders need to be able to take calculated risks, first identifying any external factors and contingencies, as well as knowing the resource boundaries faced by the organization. Thus, while risk-taking is an important leadership factor for project management, it should be noted that leaders need to be strategic decision makers who do not simply take every risk that they are presented with (García-Granero et al., 2015).

The fourth additional leadership factor is for project managers to be change makers. What is meant by 'change makers' is that project managers are immersed in progressive change (Maladzhi et al., 2012) that helps to spread a culture of innovation and change throughout the project team, or organization as a whole (Rucci et al., 1998). Leaders who can take their own innovative capacity and project that onto their employees, across their project teams, can help to build the organization to become more innovative and acceptant of changes (Maladzhi et al., 2012). This can be important, especially for organizations in the manufacturing and IT industries, as they operate in a fast-changing and highly innovative field. Without an ability to keep up with these changes and innovate to keep the organization competitive, the firm may face detrimental consequences.

Firms that operate within innovative fields are constantly dealing with the turbulent nature of innovation, which can lead to changes being necessary within the organizational structure or approach to tasks (Maladzhi et al., 2012). Thus, having a leader who is capable of dealing with this change, helping others to adjust to changes, and using this change to their advantage and the advantage of the company is incredibly useful (Maladzhi et al., 2012). At this point, it is expected that leaders have the ability to effortlessly deal with change, and to stimulate their followers to take advantage of change and be innovative themselves (Maladzhi et al., 2012).

The fifth additional leadership factor to be discussed is Business Knowledge and Literacy. This is a factor that was mentioned by Rucci et al. (1998) in their discussion of the business model that Sears used when changing the structure of their customer-orientation plan. The model employed improved business literacy among employees generally, but also impacted the leadership positions that they hired for in the company (Rucci et al., 1998). Leadership positions were required to have business knowledge of the organization so that they could function as useful leaders who understood the company's operation and culture (Rucci et al., 1998).

According to a grey literature article written by the team at Clarizen, this point of project management's business knowledge was reiterated. The project manager needs to be able to align their project with the bigger context of the company, as lack of understanding of the core business strategy of the company will more than often lead to a failed project (Clarizen Group, 2017). Not only this, but it is important for the project manager to be involved, in some respect, with all aspects of the project so that they can help to keep the project and the project team on track with the project's greater purpose within the organizational context (Clarizen Group, 2017). This can have positive results on the morale of the team, the outputs created, the support of the project stakeholders, as well as the bottom line of the company (Clarizen Group, 2017).

The sixth additional leadership factor is problem solving. When describing Sears's strategy for improvement, one of the performance leadership metrics included was an ability to problem-solve (Rucci et al., 1998). Projects are about solving an issue that a company is facing and therefore at their root, project managers need to be able to solve problems. The importance of problem solving is again touched upon in a journal article written by Patanakul and Milosevic (2009) when discussing factors that are important to managers dealing with multiple

projects at once. Problem solving is another competency that is important for the project manager to have, but is also important for the project manager to encourage and foster in their project team members (Cavaleri, Firestone, & Reed, 2012). Problem solving should, furthermore, be seen as an act of continuous engagement rather than a reactive step to be taken (Cavaleri et al., 2012). In treating problem solving this way, project managers can help to gain strategic advantage for the organization.

The seventh additional leadership factor is customer service orientation. Once again, this is a factor mentioned in Sears's criteria triangle with regards to leadership factors that they look for in their management (Rucci et al., 1998). The premise behind this leadership factor is simple. Think about who the process or product created by the project is intended to benefit. Who the end user of this outcome will be? Whether it is a stakeholder from outside the organization such as a client or customer who will be purchasing the improved version of a product, or if it is the employees in the IT division who will benefit from the process change, it is the end user or 'client' that should be kept in mind while leading a project.

The eighth additional leadership factor is flexibility and adaptability. It has been noted throughout the relevant and recent literature, and has been mentioned previously in this research project, that transformational leadership is beneficial to project management. The ability for project managers to be flexible and adaptable in their approaches and their style of leadership has also previously been noted. Flexibility is a key factor in transformational leadership and should not be overlooked as something that can influence project success (Roy et al., 2010). Flexibility is particularly relevant when outside stakeholders are involved with the project, as there will be an increased amount of conflicting approaches and different viewpoints that must be considered throughout the project lifecycle (Roy et al., 2010). In addition, Adaptability is important for project managers as projects will change and grow throughout their lifecycle, and project managers need to be able to adapt their strategies and approaches in step with the changing project (Chittoor, 2012).

The ninth additional leadership factor is communication and interpersonal skills. This may seem an obvious factor, but nonetheless it is important. One of the biggest weaknesses that a project can face, according to The Standish Group (2013), is the lack of a team's ability to create and maintain a platform for clear communications. Communication for the project manager is crucial as it goes beyond communication with the team members and facilitating

clear communication between the team members, but also includes communication with any external stakeholders involved in the project (The Standish Group, 2013). Communication is important throughout every phase of the project's lifecycle, and is important for ensuring that any changes that occur throughout the project run smoothly (The Standish Group, 2013). Communication, and a general grasp of interpersonal skills, is also mentioned by Rucci et al. (1998) when discussing the leadership factors important to Sears. A project manager would quickly fail if unable to interact with others in a professional manner, so it is understandable that interpersonal skills would be a bare-minimum requirement for someone in a leadership position.

The tenth, and final, additional leadership factor to discuss is the ability for a project manager to be a visionary leader. Essentially, this means that the project manager should have a grasp on the organizational vision and ensure that they are on the same page as employees throughout the entire project process (Maladzhi et al., 2012). Therefore, leaders have to be able to communicate this vision to team members in ways that appeal to their shared values (Maladzhi et al., 2012). This can be done through inspirational speeches, written messages, or any other means that has an element of inspiration that the team members can latch onto (Maladzhi et al., 2012). This can have a positive effect on the team members as it helps them to become motivated to achieve the vision as they will find meaning in it too.

6. TIMING OF LEADERSHIP FACTORS IN PROJECTS

The goal of this chapter is to discuss the timing of the ten leadership factors mentioned in section 5.2, specifically to shed the light on each project phase and what factors are best to be used in the said phase. As a starting point, the project cycle will be defined along with its phases and the culture of these phases, then the importance of selecting the best timing when using the 10 leadership factors. At the end, how to select leadership factors.

6.1 Project Cycle

As has been previously discussed, culture is an important consideration when it comes to projects and businesses more generally. Depending on the project itself, as well as the company within which the project is being performed, there will be different cultures leading to different leadership styles and co-worker interactions, as well as differences in how projects will be undertaken. In this section, the project cycle will be explored along with a high level description of each project phase. Then, the culture of each project phase will be highlighted.

6.1.1 Phases of Project Cycle

Projects have been one of the main focuses of this research. While many aspects of projects have been explored in-depth, the phases that a project may be divided into have not yet been identified or their relevance and importance discussed. A project, as defined by PMI is “a temporary endeavor undertaken to create a unique product, service, or result” (PMI, 2017b, p. 8). Projects are generally discussed in terms of having a project lifecycle, meaning that they go through a series of stages which include a discernable beginning and end. The PMI also provides a clear definition for project lifecycle which can be used as a starting point to build upon. The definition by the PMI (2017b, p. 8) is as follows: “[Project lifecycle is] the series of phases that a project passes through from its start to its completion”. The phases of the project lifecycle are: starting the project, organizing and preparing, carrying out the work, and ending the project, whereas the process groups are: initiating, planning, executing, monitoring and controlling, and closing.

The benefits of using a lifecycle model when undertaking a project are numerous. Lifecycle models tend to bring consistency into an organization’s projects. They provide a channel of communication, as well as facilitate pre-project initiatives and quality assurance

(Kloppenborg, Tesch, & Manolis, 2014). Projects are frequently divided into smaller steps or phases, which are used to differentiate the various initiatives that must occur for the project to be completed. These phases can be broken down even more into sub-phases to further structure the plans for the project (Bonnal, Gourc, & Lacoste, 2002). According to the PMI (2017b), a project phase encompasses a collection of highly related activities occurring during the project that culminate in one or multiple deliverables being completed. The idea behind employing a lifecycle model for a project is that all of the inter-related activities of one phase must be completed before the project can move forward to the next phase (Kloppenborg et al., 2014).

It is important to note that different types of projects will be structured differently and therefore require different phases. For example, a small project may have fewer or different steps from those present in a large-scale project (Bonnal et al., 2002). Irrespective of the differences that projects in separate fields may have, many companies choose to operate their projects with a simple and generic set of phases (Kloppenborg et al., 2014). Many others will choose to employ phases more tailored to their specific industry or their project scale needs. While some of the project phases may differ depending on the type of project, it's aim, and the field within which it is operating, most technical projects will require two broad phases; the pre-project phase, and the project phase (Bonnal et al., 2002).

The pre-project phase is important because it is where potential projects are identified, researched, and the benefits to the business discovered (Bonnal et al., 2002). Once this phase is complete, the decision-makers within the organization will choose which of the identified potential projects will get to move forward, allocating monetary, human, and other resources towards completing the projects (Bonnal et al., 2002). Once resources have been allocated to a specific project, it then moves into the second broad phase: the project phase.

While this simple two-way division of a project is useful as a theoretical concept, it is often more complex in real-world practices (Bonnal et al., 2002). As such, projects are often divided into more practical stages that can be implemented with greater ease into a tangible project setting. There are a variety of ways a project may be divided, and many options have been provided and deliberated throughout the relevant literature. The generic stages, touched upon above, that tend to be used as the simplest framework, are the initiation phase, the planning phase, the execution phase and the closing phase (Kloppenborg et al., 2014). The

phases, however, that will be used and discussed in this document, will be the process groups outlined in the PMBOK guide (PMI, 2017a):

1. Initiation;
2. Planning;
3. Executing;
4. Monitoring and Controlling;
5. Closing.

The only real difference is the addition of the Monitoring and Controlling phase, an important, yet often overlooked piece to project management and project success. It is totally understood that the above are process groups and are not phases based on PMI PMBOK 6th edition, however, some other researchers call them as phases, excluding or including the monitoring and controlling element. Thus, in this research work, and to avoid any confusions when conducting interviews, the decision was to use the word 'phase' instead of 'process group'. Another way to look at this would be if this research work used explicitly the PMI phases, then there is a chance that the focus on the monitoring and controlling process group will be missed. Thus, the ideal approach in this situation is to use the term 'phase' when speaking about process groups.

- **The Initiation Phase**

The initiation phase occurs primarily after the pre-project broad phase. Once information has been compiled on things such as economic trends, client communications, technological advances, concerns from distributors and partners, and the competition, the information is sorted to identify concepts for possible projects in the pre-project phase (Bonnal et al., 2002). After that, the initiation phase can commence with the projects that are aligned with the organization's strategic objectives (PMI, 2017a). As defined by the PMBOK guide, the group of processes in the initiation phase are those that are performed in order to identify either a new project or an extension to an existing project so that authorization to commence the project/extension can be obtained (PMI, 2017a). This is often considered one of the most crucial phases with regards to project success because choosing a project based on incomplete information can lead to money, time, and resources being spent on a project that was doomed from its inception. Often, IS and IT organizations that are dealing directly in selling products

based on innovation have great need for engineering capabilities and thus have high fixed costs. These high fixed costs mean that they have even more at stake for every project undertaken. Therefore, dependable individuals with wide ranging knowledge bases are required to ensure that the projects undertaken are as efficient, cost-effective, and valuable as possible to the organization (Fulford, 2013).

- **The Planning Phase**

The next phase occurring in a project cycle is the planning phase. One piece that must be taken into account is the capabilities of the company (Bonnal et al., 2002). This refers to the know-how of the workforce involved, as well as the resources available to the company, both monetary and other (Bonnal et al., 2002). When discussing technical projects, it is also important to discuss the technical know-how, or capabilities of the company (Bonnal et al., 2002). Aside from understanding the capabilities of the company, it is also in this phase where a risk management assessment is performed to identify the threats and opportunities that a project presents (Bonnal et al., 2002). As well, within the planning phase, there should be a breakdown schedule and an overall project plan (Thomas, Jacques, Adams, & Kihneman-Wooten, 2008).

The planning phase is one that is present, no matter what lifecycle model is chosen (PMI | AgileAlliance, 2017). The difference between models lies not in whether planning is present but rather how much planning occurs as well as the timing of planning (PMI | AgileAlliance, 2017). Some models will plan as much as possible upfront, while other models may employ some form of continuous planning and implement a re-planning cycle to ensure that plans are updated with any new, relevant information obtained throughout the project's life (PMI | AgileAlliance, 2017). Essentially, this phase refers to any processes that are "required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve" (PMI, 2017a, p. 23).

- **The Execution Phase**

After the planning phase, the execution phase of a project commences. Once the project has been fully defined in the planning phase, the execution phase will begin. It is in this phase that all of the activities culminating in the final deliverable will be undertaken (Bonnal et al., 2002).

During the execution phase, it is the duty of those involved to take the compiled information of the risks involved in the project and use it to guide the project implementation (Bonnal et al., 2002). This will hopefully ensure that opportunities are taken advantage of, and threats are minimized or avoided all together. It is this phase that many individuals picture when they think about projects and project completion simply because this is when the tangible deliverables and requirements for projects are executed (PMI, 2017a). It is important to note here that while many projects will be sequential in nature, including when they work on and conclude their deliverables, this is not always the case (Bower & Walker, 2007). In more complex circumstances, where projects do not follow a simple and sequential flow, the execution phase may in fact be embedded in a number of areas throughout the project lifecycle.

- **The Monitoring and Controlling Phase**

The next phase that will be discussed is the Monitoring and Controlling phase. This is the phase mentioned previously that has been added from the generic model that many organizations choose to use. While often under-appreciated, monitoring and controlling is a key piece of the project-completion puzzle and has great value to organization's project success (University of New Hampshire, 2018). Depending on who you ask, monitoring and controlling will occur in two different ways. For the purpose of having a thorough understanding of this phase, both will be discussed. The first way that monitoring and controlling can be employed is as a way to keep the project running on time, on budget, and within scope throughout the lifecycle of the project – particularly during the execution phase (Rozenes, Vitner, & Spraggett, 2006). The second way this phase can be used is after the project output has been completed and has started to be put to use (PMI, 2017a). PMI (2017a, p. 23) also considers this phase during the execution of the project, mainly "to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes". Essentially, its role here is to ensure that any bumps have been worked through and that the output works effectively as well as adds value to the company or client (PMI, 2017a).

It is in this phase that areas are identified where a change to the initial plan may be required, and in which these changes are instigated (PMI, 2017a). If the project has diverged significantly from the project plan and is causing issues, then remediation activities can be

performed to get the project back on track (University of New Hampshire, 2018). Keeping in mind that many of the activities designated for this phase are occurring throughout the project, changes may be instigated during other phases, such as the execution phase. Phase specific activities may include quality control, tracking risk management activities, and providing status reports (University of New Hampshire, 2018). Without this phase, the project may be closed too soon or have included unnecessary steps, leading to sunk costs, time, and resources, with the potential for the project ultimately failing in its intended goal.

- **The Closing Phase**

Finally, a project will conclude with the Closing phase. In the closing phase of a project, everything learned from the project, the experiences and knowledge acquired, as well as the pitfalls faced throughout the project will be recorded (Bonnal et al., 2002). In this phase, the final deliverables of a project are accepted and any final loose ends are tied together (Kloppenborg et al., 2014). The deliverables are handed over to the company or client to be put fully into use. The closing phase is, put simply, a formal ending to the project whether successful or not (PMI, 2017a), so that new projects can start, the deliverables can be put into use, and lessons can be learned to improve future projects.

Unfortunately, this is another phase which is often under-appreciated by project managers (Aziz, 2015). This is because many project managers consider a successful project based on having completed solely the deliverables of time and cost (Aziz, 2015). The closing phase is often seen as a bureaucratic phase that provides little significance to the actual project (Aziz, 2015). This is often not the case and in fact neglecting this phase can put the organization at significant risk, damage the credibility of the project team and manager, result in substantial losses, and prevent the organization from realizing added benefits from the project (Aziz, 2015).

6.1.2 Culture of Project Phases

Given the distinctive differences between the phases of a project there is no reason to believe that culture will not also play a role in project phases or that the culture between each phase will be identical, irrespective of the company culture. One issue that has presented itself throughout the literature is a lack of in depth research performed on the culture of organizations as a whole, the culture of the project, and most pertinently the culture of

various project phases (Henrie & Sousa-Poza, 2005). Organizational culture has received more attention in recent literature but the research still remains sparse with regards to the more specific cultures seen in projects and the phases within projects (Best, Smit, & Faber, 2013). As such, information was extracted both directly as well as through inferencing from those sources that were available, with literature reviewed expanding into grey literature as well. An article written by Henrie and Sousa-Poza (2005) outlined a couple reasons for this lack of cultural research, namely: an absence of research on leadership in multinational teams, and an insufficient understanding of what 'culture' actually is within the context of an organization and organizational structures.

To determine the potential cultural differences between the various phases, it is important to first identify differences between various aspects of each phase that may allow for cultural distinctions. One stark difference noted between earlier project phases and the later ones is that often there are fewer people involved in the initiation and planning phases of a project, compared to the later phases, specifically the execution phase, where an innumerable quantity of individuals may be directly or indirectly involved in the activities that lead to the creation of final deliverables and the maintenance of those deliverables (Bonnal et al., 2002). Most of the differences that can be seen in the culture of each project phase stem from the varied activities that are occurring within each phase. The activities resulting in a general culture for each phase, as well as a brief overview of the most compatible related leadership styles, will be described in the following paragraphs, while an in-depth description of the appropriate leadership factors for each phase can be found in section 6.3 and a condensed version of the cultural points and appropriate leadership factors in Table 15.

- **Initiation Phase Culture**

Starting with the first phase, the initiation phase, a distinctive culture emerges. In this phase, very few individuals are generally required to participate (Bonnal et al., 2002). This phase is simply about identifying stakeholders and developing the project charter (PMI, 2017a). There will exist in this phase a short-term relationship between the project manager and the other key stakeholders, such as a representative of the organization for which the project is being performed, often where the client will be involved in the decision for who will be involved in the planning phase and the project execution (Thomas et al., 2008). Because of the nature of this phase - both that it is about gathering facts and brainstorming project ideas - a smaller

number of individuals makes more sense than involving a multitude of people. This may bog down the process, stretching it out far too long to be useful.

Due to having a small number of individuals involved in this phase, the leadership style employed by the project manager may tend more towards a collaborative inclusion of those few people involved. Since it will be important for ideas to flow and develop, a more democratic and inclusive environment makes the most sense, meaning that the project manager will take a guiding role, giving their professional insight rather than taking a directive role. The guiding role and the directive role are explained in section 2.4.1 in relation to leadership.

- **Planning Phase Culture**

Moving on to the planning phase, we see a slightly different culture from that in the initiation phase. In this phase, there are also a relatively small number of people involved in order to keep the project moving smoothly without overwhelming it with too many people's ideas for how the project should be directed and laid out (Bonnal et al., 2002). Of course, it is beneficial to have some of the project team, the client, or individuals from key departments involved in the project. This ensures that communication between parties is better, and inevitably makes the project run more smoothly (Ballou, Belardo, & Pazer, 2010). While client often establishes completely separate teams for the planning and actual implementation team, there is evidence that suggests that these two teams should be much more integrated to ensure a better understanding of the project and an overall more positive impact on project success (Thomas et al., 2008). In this phase, all of the necessary metrics and information regarding various factors of the project will have been sought out and the project itself will have been approved (Bonnal et al., 2002). It is now that these metrics will be put to use by the project manager with few other individuals to assemble a plan of action for the project, including creating a project schedule, defining the deliverables and requirements, deciding on staff and how to guide them through the project, as well as developing methods for how to interact with team members and external stakeholders to ensure that the project meets its cost, and timeframe requirements (Barron & Barron, 2013).

Similar to the initiation phase, the culture will be more collaborative given the smaller number of people involved. In this phase however, even fewer people may be involved due to the fact that it is a stage devoted to decision making. The project manager will undoubtedly have

personal preferences and professional insights as to how the project should be run, and how interactions with and responsibilities of the team members and external stakeholders should be handled. This phase is often the most difficult for project managers to undertake, even though they may not be putting to use all of the leadership skills or trying to organize and direct individuals (Barron & Barron, 2013). This difficulty comes from the extent of guesswork involved in the phase, as they create a plan for how to manage team members and run a project for which they may not have all of the relevant knowledge about it (Barron & Barron, 2013). One way in which to limit the guesswork, is to involve the client and some team members in the planning process since the team will have more accurate insights on how they themselves work and what support systems they will need to do their best work (Thomas et al., 2008).

As such, it can be assumed that it would also be common for the culture in the planning phase to be more collaborative. Different from the initiation phase however, the planning phase may have a stricter working environment, with a more focused approach to achieving the objectives. As a phase devoted to being as prepared as possible in order to complete the project successfully, the project manager will need to be direct and ensure that the few individuals working with them at the time are being thorough, covering all of the necessary material, and working together cohesively to create a well laid plan. Given the high-level of uncertainty characteristic of this phase, it is useful for the project manager and the team involved in the planning process to implement Agile methodologies, since these were developed to explore feasibility in short cycles and then quickly adapt based off of the evaluations and feedback (PMI | AgileAlliance, 2017). These methodologies have been around and in use for several decades to date, and over this time period have been used in various fields, for a number of different capabilities (PMI | AgileAlliance, 2017). Over time, the Agile methodology has been refined, adapted, and improved so that it can be as beneficial as possible to organizations dealing with high-uncertainty situations, making it a tried and true tool for project managers to implement (PMI | AgileAlliance, 2017).

- **Execution Phase Culture**

The execution phase of the project lifecycle also has a distinctive culture from the first two phases discussed. In this phase, a much greater number of individuals will be involved with the processes that are key to the completion of the phase (Bonnal et al., 2002). Members of

the project team will be working to develop the outputs of the project and individuals both from within the organization as well as from outside the organization may be recruited to either directly or indirectly aid the project. With this large number of individuals involved, the culture of the project will be very different from the initial two phases. The plan that was developed by the project manager in the previous phase, for how to lead the workforce involved in the project, will become useful here, especially if the project manager made correct assumptions about the team and how they would work together. The culture apparent in this phase will greatly depend on the organization in which the project is operating but will most likely have more of a hierarchal structure than the culture seen in the previous phases to ensure that the project can continue to move forward according to plan. Of course, innovation will be important in this phase. Now that more individuals are involved, innovation with regards to how a project plan can be realised, especially when unforeseen circumstances and issues arise, will be crucial.

From this distinctive culture, it is apparent that some of the leadership factors that would work best for the first two phases will be less appropriate for use in the execution phase. The project manager may now need to take on a role that is more directive than was necessary earlier in the project's lifecycle. While it will be important to use the plan for instructing the numerous individuals involved in the project, it will also be important for the project manager to be flexible and responsive to the various aspects of the project that they may not have anticipated correctly, or at all, in their plan. Their leadership style will have to be flexible as well, and now that they are dealing with a large number of people, often from a wide variety of personal and professional backgrounds, it will be important to use leadership skills that help to keep people focused, motivated, and working well together despite differences. It will also be important for the project manager to employ leadership skills that foster an innovation culture in the project's execution phase. Depending on the general culture of the organization itself, this may be a task more or less difficult.

- **Monitoring and Controlling Phase Culture**

Moving forward through the project lifecycle, the monitoring and controlling phase comes into action. As mentioned earlier, this phase can be important throughout the lifecycle of a project but does have its time as a stand-alone phase after the execution phase has been completed. In simpler models of the project lifecycle, this phase is often not included, and

many of its characteristic activities are lumped together in the execution phase (Rozenes et al., 2006). However, it does still have some specific cultural differences to those seen in the rest of the execution section. As mentioned above, one role that the project manager will have once the project commences is to make sure that they are flexible when it comes to the plan they had developed. There are nearly always unforeseen circumstances that may lead to a change in the plan to be necessary. Once the deliverables for the project have been completed, it is still important for checks and balances to be performed. Throughout the lifecycle, monitoring and controlling should be performed as well, to create a culture of double checking and constant feedback loops between the team members with each other and with the project manager.

If this culture brought on by monitoring and controlling is produced in the rest of the project where it occurs, it will be even more clearly emphasized in the phase dedicated specifically to monitoring and controlling. The nature of this phase is as a portion of time set aside specifically for double-checking everything about the project. Therefore, it would make sense that the culture present in the phase would be more open, with plenty of dialogue between the numerous individuals involved in the project.

These cultural variations mean that there are some differences as well in the leadership factors that will be most appropriate for this lifecycle phase. Especially if there are issues brought up, and if mistakes were made, it will be important for the project manager to handle these in a way that does not make team members feel that they are being blamed for missteps. Rather, an ability to use the issue as a learning process for the project team while simultaneously fixing the problem before the project gets closed will be an advantage.

- **Closing Phase Culture**

The final phase to be discussed is the closing phase. This phase is about ending the project which generally means that the project manager is closing contracts with outside consultants, thanking those involved in the project, recognizing any valuable team members and briefing everyone on the successes and failures of the project (PMI, 2017a). The project manager has a very active role in this phase, taking up many responsibilities and guiding team members effectively through what needs to be done. Depending on what happened in the project, what went wrong, and where missteps occurred, this can be a delicate step. Important portions of

the closing phase, such as the debriefing, writing up of closing manuals, and setting up help desks, are often skipped or done incompletely (Thomas et al., 2008).

The culture present in this phase is one reminiscent of the culture present in business restructuring initiatives. Think of the numerous individuals within the organization that were brought onto a project for a short period of time and now must return to their regular jobs or be displaced onto a new project. The processes of discussion about what worked, what did not work, and what should be changed for the future, as well as the regrouping of individuals also occur when organizations are being restructured (MRH, 2014) just as is seen when projects are in their closing phase. There will often be some confusion, concern, and a readjustment period (MRH, 2014) that must be considered by the project manager and those in charge when they are going through the steps of closing the project. They will also be responsible for preparing those involved for the reorganization that they will go through post-project. If other projects are to start afterwards where the project manager is in charge, it may fall on the project manager to partially or fully reorganize the individuals involved in the project.

In the closing phase, there will again be a difference in which of the leadership factors are most useful. In any event of restructuring or closing, whether of projects or entire organizations, a different tactic is often necessary in terms of leadership. Leadership is especially important when projects failed partially or entirely, indicative of a negative undertone to the closing discussions and potentially an increased amount of work to be done with regards to the client or end-user. Often the type of leadership most useful for making the process of restructuring as painless as possible is some form of change management or change leadership (MRH, 2014). This term was explained a little bit at the end of section 2.4.1, but the intention was not to go deeply into the field of change management in order to have a focused research. However, the 10 leadership factors discussed during this research work cross sometimes with the change management knowledge and understandings.

6.2 Timing of Leadership Factors

Timing of applying leadership factors is crucial, especially when it comes to different project phases. Thus, this section will be discussing, in general, the importance of proper timing and the impact of poor timing on project success. Add to this, the roadblocks that prevent

appropriate application of leadership factors, as well as the importance of hiring the right mix of individuals in the project will be discussed.

6.2.1 Importance of Proper Timing

Recognition of the importance of the 10 leadership factors that have been outlined above is a useful starting point for commencing a project. Understanding those leadership factors, with the intention of employing them throughout the project lifecycle, is significant for those in a leadership position and, as has been shown through previous research, has the potential to greatly improve the chance of successfully completing projects. To ensure an even higher chance of success, however, it is important to not only use these leadership factors, but to take into account at which phase of the project leadership factors will be most beneficial.

Timing, whether it be for completing a recipe or planning a big life change, is vital for almost every situation in life. The importance of timing extends to businesses as well, and arguably more so with regards to leadership within business dealings (Oechsle, 2014). Generally speaking, when things are performed at the proper time, the outcome is superior to when things are performed at an inopportune time – even if they are executed well. Thus, timing becomes nearly as important as ensuring you have the right steps in place to complete tasks.

Timing is equally important when it comes to implementing the leadership factors discussed previously. As was reviewed, there are ten identified leadership factors which should be used in order for a project's leader to be effective and the project itself to have a higher chance of success. Often the roles that managers play are competing with each other, seemingly mismatched agendas that a single individual is responsible for forwarding (Thoms & Pinto, 1999). Many project managers fail because of an inability to find a way to balance all of the competing demands and responsibilities that they have in their job (Thoms & Pinto, 1999). Thus, having a grasp on timing becomes incredibly important for project managers, so that they understand when each of the leadership skills they have developed will be most useful to moving the project forward (Thoms & Pinto, 1999).

6.2.2 Impact on Project Success

As with anything else, poor timing can also be detrimental to projects. Poor timing with regards to leadership factors can result in issues throughout the project's lifecycle, increased confusion and decreased cohesion, and can even jeopardize the success of the project in

extreme cases. This means that project managers have a duty to ensure that they are using all of their resources, knowledge, and best judgement capabilities to determine, not only the 'what' of project management and leadership, but also the 'when'. Likewise, if a project manager is able to master the timing of their leadership capabilities, the project will be impacted in a positive way, with benefits being discovered that may not have come to light if improper timing of leadership factors was used throughout the project. Understanding the temporal nature of each of the leadership factors will be valuable to ensuring a project is successfully completed (Thoms & Pinto, 1999).

While there is little research done on impact that timing, specific to the use of leadership factors, has on the success of a project, much research has been performed on the impact of timing in general with regards to projects. While not ideal, this research may be used as a proxy for the importance of timing with regards to leadership factors, as many of the principles and lessons will be the same. Much of the research into timing of projects refers to the importance of time management in projects (Tremel, 2016). This being that the various tasks and responsibilities of project managers need to be balanced appropriately to ensure that energy gets directed, where it is needed, when it is needed (Tremel, 2016). Project managers will be judged, not only on their ability to deliver outputs, but to also deliver them within a timely manner. An indicator that timing of the steps, processes, daily objectives, and larger goals of the project need to be timed properly so that delays and project failures do not occur (Tremel, 2016). If timing of the physical aspects of a manager's duties need to be carefully considered, it stands to reason that this same principle would extend to the leadership factors that the project manager should employ. If an inappropriate leadership factor is focused on too heavily in one phase, the results of that phase may be challenged or fail altogether, hindering the success of project phases and potentially the entire project.

It has also been found that project managers of successful projects were able to adopt leadership profiles that were adapted to the projects they were working on (Roy et al., 2010). Given the fluid and ever-changing nature of projects, it stands to reason that these managers were also able to adapt their leadership approach, throughout the project's lifecycle, to fit the circumstances of each phase. If this ability to adapt leadership approaches is part of what leads to a successful project, then it is important that managers also understand when it is

most appropriate to use the various leadership factors and adapt the ones they are using as necessary.

Essentially, there were two major areas that information was drawn from to get information on how leadership factors impacted different project phases. The first area was from literature. A literature review was performed primarily looking at academic literature with some grey literature included as well. Both forms of literature were included because there simply has not been a lot of research performed on the impact that various leadership factors have on project success while looking at the culture of each project phase. Where literature does exist, it does not cover all the factors that were identified. To supplement this sparse literature, the second area that was used to drew from was the analysis of project managers during interviews. This information was based on their experiences in the field and their day-to-day involvements with the role of leadership factors during each project phase. This information was coded into empirical evidence that was used to expand upon the literature previously undertaken.

6.2.3 Roadblocks

There are a number of different roadblocks that may present themselves throughout a project's lifecycle with regards to the proper implementation of leadership factors. The two major branches of difficulties are the personalities of individuals involved in the projects and the culture of the company within which the project is being completed. In terms of personality difficulties, this section can be divided into difficulties with regards to the project leader's personality and the personalities of the project team members. Each of these three branches of roadblocks will be discussed in depth in the following paragraphs.

The first difficulty that a project may face with regards to proper implementation and timing of leadership factors is the personality of the project leader. It has been noted that the project leader's style of leadership can greatly impact the outcome of a project. Two broad issues with regards to the project manager's personality may cause roadblocks for the project. First, if the project manager chooses to take an approach to the project that does not mesh with the skillset or drive of the team, it can lead to resentment among the team members. Team members may choose to move things forwards in a way they see most fit without alerting the manager, or they may cease to put effort into the project. Both of these can lead to issues with regards to achieving a successful project.

The second way in which a project manager's personality can negatively impact a project is if the project manager is using a method of management that is not appropriate for the project. Sometimes this is due to the project manager's preference or knowledge from running previous projects that ended successfully. As noted, different projects require different approaches and furthermore require flexibility and adaptability from the project managers. If a project manager is so stuck in his/her way of running projects, that they are unable to use all of the relevant information to decide how the project should be run, they may end up being the downfall of a project that needed a different approach.

The second difficulty a project may face in terms of leadership factor application once again deals with the personalities of those involved with the project, this time regarding the personalities of the project team members. Working in teams is a difficult task no matter what situation, industry, or objective. Teams are groups of people, either small or large, that work together with complementary skills, all set towards a unified goal (MRH, 2014). One key take-away from this particular definition is the word 'complementary'. Teams bring together individuals from across an organization, or even across multiple organizations, to include individuals with a variety of backgrounds, skillsets, and opinions. This variety of viewpoints is crucial for projects but can also cause issues when people do not mesh properly, arguing about the project.

This is why team members, either as a whole, or individually, can cause impediments to project completion. Therefore, team building and team cohesion are vital to the success of projects (MRH, 2014). It must be noted that managers play an important role in ensuring that teams are working well together, as leadership extends to ensuring the integration of teams. This being said, it is also the responsibility of team members to work with each other for the end goal of project success – whether or not they get along perfectly with their project team members. Teams are considered to be able to produce better solutions – and more of them – than an individual, making it clear that the intricacies of project teams need to be addressed or countless potential benefits, ideas, and solutions for projects will go unrealized (MRH, 2014).

Another point of note with the above definition of a team is that all of the individuals are united under a single purpose and end goal. It is crucial that all of the team members have the same understanding of the project endgame as well as an understanding of how the project

will unfold. Organizations may choose to employ the most knowledgeable person in a field to aid them with a project, but if this individual is not on the same page as the rest of the team or is not willing to be a team player and follow direction from the project manager, they will cause significant setbacks to the project.

The final difficulty to be discussed is the broader culture of the organization. While individual project leaders or team members may personally feel one way about the proper implementation of leadership factors, it is difficult to argue or disobey upper management if they have a different method in mind. It is also important to note that if a company's culture fits a particular mold and things are run a certain way, many of the employees will agree with the leadership tactics in place. What this means is that there may not be individuals in the organization who are willing to question if things are being performed as efficiently and effectively as possible to garner the best results from projects.

Some organizations were not built for the era of innovation and projects. This can lead to difficulties getting everyone fully on board with the fast-paced and fluid nature of projects and project management. Even if upper management recognizes the importance of implementing projects, this does not mean that the rest of the organization will be onboard with the idea of changing up working environments, working closely with people from other departments, or shifting the make-up of the company to accommodate a new project-friendly set-up.

Organizational culture, as has been discussed previously, is a very difficult thing to change. It is not something that will happen overnight, and therefore requires that people from all levels of the company be advocates for a change in culture that will positively impact the company and their ability to innovate. It is also crucial to recognize that even if organizations are set-up to accommodate projects, culture extends deeper than simply the organizational structure of a company. For example, if in general, employees are not invested in the health and wellbeing of the organization they work for, they may complete projects with the intent merely of implementing the objectives set out in the project plan. This lack of enthusiasm or investment can lead to projects that are closed without performing any checks and balances or any beneficial closing duties. Essentially projects may be walked through robotically, with employees investing the bare-minimum of effort, resulting in projects that do not realise their

full potential and project teams that repeat the same mistakes as previous projects, leading to even more failures.

6.2.4 Project Hiring

As can be seen from the roadblocks mentioned above, it is incredibly important to have the right mix of individuals working on a project. This means that hiring processes for projects should take into consideration the leadership factors that they expect of individuals at each stage of the project lifecycle and hire those leaders and team members that will work best to promote these leadership factors as they work through the section of the project they have be designated to complete. A poor choice for team members, project leaders, or both, may result in the failure of an otherwise promising project. Likewise, a good combination of chosen project members may be the factor that pulls a less strong project to successful completion.

When hiring processes for a project are beginning, the organization should take special consideration into who they hire as a project team lead. As has been identified countless times, leadership is an incredibly pertinent part of project success. The knowledge and skillset of the project manager should of course be considered, but their proven ability to be an adaptable leader in a variety of situations, and their mastery of all of the leadership factors should equally be taken into account. A project manager who has the leadership capabilities to pull a team of less compatible or difficult workers together is arguably more impactful than having a team that works well together led by a sub-par manager.

Hiring for the team members is also an important aspect of the hiring process. Particularly in projects that require cross-discipline skills and knowledge, having a team that is diverse and well-rounded is important. Whether or not potential team members work well together may be a consideration, but with a skilled project manager taking charge of the project, this should not be as high a concern as having useful individuals part of the project team.

6.3 Selection of Leadership Factors

As was briefly discussed previously, the cultural differences between the project phases lead to differences in which leadership factors should be most focused on within each phase. In this section, each phase will be discussed more in depth with regards to the leadership factors that should be primarily focused on throughout the phase as well as mention of those that

are less critical to success within each phase. A concise snapshot of all of this information can be viewed in Table 15. First, however, a brief list of the identified leadership factors will be included below for easy access and comparison. For an in-depth description of each of the leadership factors, refer back to Table 13.

1. Integration (Ideas and Teams);
2. Balancing Objectives;
3. Systematic Information Capturing;
4. Commitment to the Project;
5. Motivational;
6. Innovative;
7. Idealized Influence;
8. Fast-action Decision Making;
9. Intellectually Stimulating Team;
10. Individualized Consideration.

6.3.1 The Initiation Phase

The first phase to be discussed in depth is the initiation phase. With regards to leadership factors, a few in particular come to the forefront of importance. As mentioned, this phase has much fewer individuals involved. This phase is also about gathering information as thoroughly as possible and coming up with innovative ideas. Thus, three leadership factors come to the forefront of importance.

The first leadership factor is Systematic Information Capturing. Within this entire phase, it is important for the project leader to gather information together; an ability to do this in a systematic and thorough fashion means that the project manager and any relevant stakeholders will be as well-informed as possible about the environmental factors surrounding and impacting potential projects.

The second leadership factor that rises to prominence in this phase is that of Innovation. It is in this phase that brainstorming occurs for potential projects. Project managers must use their innovative capacity to take the information they have gathered and come up with useful

solutions, ideas, and goals that may be undertaken as projects. Without this innovative capacity in use, ideal project ideas may not be deliberated, thus allowing a sub-par idea to instead be followed through.

The third leadership factor of import for this phase is the Integration of Ideas. While the entirety of the leadership factor is not needed for this phase, the idea side is highly important. Once all of the relevant information has been compiled and a myriad of project ideas considered, these various factors must be assembled in order to submit the best possible project idea to present to the relevant governing bodies. Without proper Integration of the information compiled, key metrics might be missed that would change crucial decisions about the project chosen to be pursued. This lack of Integration and consideration may even lead to a completely different project to be pursued, resulting in less valuable outcomes or a project doomed to failure.

It is also important to point out which leadership factors will be least necessary for project managers to put their energy into during this phase. While some may still have importance, such as being committed to the project and being a motivational force for those who are already involved, there are others that are much less relevant – particularly those concerning the team which has not yet been introduced into the project at this stage. Intellectually Stimulating Team, along with Integration with respect to the team, and to some extent Individualized Consideration, are all leadership factors that do not have much use within this project phase.

6.3.2 The Planning Phase

Moving on to the Planning phase of a project, a slightly different set of leadership factors appear most advantageous. Three in particular come into prominence while two more show their importance as supporting factors. This phase is dedicated to combining the information discovered in the initiation phase with the project chosen to be pursued in order to develop a thorough plan of attack for executing the project to its completion.

The first leadership factor that comes into focus during this phase is Integration, primarily of ideas. Many ideas, and lots of information were gathered in the previous stage, and while this was integrated on a broader scope in order to present the project for approval, the planning phase requires even more Integration of these ideas so that a cohesive plan can be put

together. Without further Integration of information in this phase, the plan would not consider all the elements that had been identified as pertinent to the project. It has been outlined that plans for projects will already be riddled with uncertainty, simply because there are so many elements of projects that can not be prepared for or known about in advance. Thus, it becomes even more important to have a plan that is as equipped as possible to handle the elements that can be prepared for.

The second leadership factor of importance in this phase is the Balancing of Objectives. This is important in this phase in a mental capacity rather than being put to action. During the planning phase, a project manager has to plan out many aspects of the project's execution. In order to have a plan of attack for achieving all of the, sometimes conflicting, objectives, a project manager should set aside a portion of their planning to devote to how they will manage these objectives throughout the project's lifecycle, including when they believe that these objectives will need to be completed, and how they will handle bumps that lead to conflicts in time and resource management between different project objectives.

The final major leadership factor that should be considered in the planning phase of the project is Fast-action Decision Making. This factor takes into account more than just being able to make judgement calls quickly. A timeframe may be placed upon the planning phase which means that the 'Fast-action' portion of this factor may need to be utilized, but there is another reason that makes this factor particularly pertinent to the planning phase. There are many unaccounted for, or uncertain metrics with regards to any given project that must be accounted for in the plan drawn out for the project. This means that even if time is not a concern for making judgement calls in the project, judgement calls still need to be made with limited information. Educated guesses formulated with the limited information available must be made by the project leader during this phase, requiring them to draw from their personal knowledge bank and experiences with past projects. These two elements combined – the potential of a time limit and the need for judgement calls on difficult decisions – make this leadership factor a key to effectively executing the planning phase.

Other factors that play lesser, but still important, roles in the planning phase include innovation, with regards to creating plans and solving conflicts within the plan, as well as continuing to have a commitment to the project. This last piece will be key throughout the life of the project, cropping up in every single phase from initiation to close. There are also some

leadership factors that will not be particularly useful during this phase, and too much energy spent on them would be a waste of the project manager's time. These are, as with the initiation phase, the factors that deal with the project team. For example, Integration of the team, Idealized Influence, and Intellectually Stimulating Team, will not be particularly necessary. A final factor that should not be needed to a great extent is the Systematic Information Capturing. All of the information should have been systematically gathered in the initiation phase and ready for use in the planning phase. Of course, if there was information missing that became apparent once the planning had begun, then this factor might be put to use again.

6.3.3 The Execution Phase

During the execution phase, the leadership factors of importance shift even more drastically. The execution phase uses the greatest number of leadership factors above every other phase during the project. It is also when the greatest number of leadership factors come to the forefront of importance, rather than playing supporting roles.

The first leadership factor to be discussed is Fast-action Decision Making. It is in this phase that this factor becomes important for execution of real-time fast-action decisions. While in the planning phase, this was primarily important as a way to create a contingency plan for various potential judgements, it is now time for the project manager to put their judgement capabilities into action. There will most certainly be a time-frame associated with this stage in the project and so it is important that project managers make decisions quickly and with excellent judgement so as to not waste time or resources.

The next leadership factor that will be discussed as it has high importance in this project phase is Intellectually Stimulating Team. Now that the team has been put together and the project manager is dealing with a variety of individuals from many educational and professional backgrounds, it will be important for the project manager to continue to stimulate the team's innovative mind and keep them engaged with the project. Members who feel that they are not being adequately challenged may lose interest in the project, therefore losing their drive to bring forth their best work and ideas. As can be imagined, this is extremely detrimental to a project, especially if key members are putting their energy elsewhere and not helping to move the project forward.

Once again with respect to teamwork, the next factor that is crucial to the execution phase is Integration of the team. This was touched upon earlier when discussing the various roadblocks that might hinder a project, one such group of roadblocks being personalities of the team members. If team members are not working together as a cohesive unit, this can be incredibly detrimental to the success of a project. It is a valued leadership quality to be able to guide others to work as a team, and particularly with projects where individuals from across or between companies are working together who have never worked together before, the ability to create a cohesive team is an incredibly valuable skill.

It will also be essential to utilize the leadership factor of Individualized Consideration during this phase. This factor is once again about interactions with the team. Given that the team is composed of a variety of individuals from different backgrounds and with different strengths and weaknesses, individually considering each team member is a good way to involve everyone in the project in ways which maximize their strengths to the benefit of the project. Individualized Consideration helps to ensure that each team member feels valued and appreciated on the team. In ensuring that everyone is felt as a valuable member of the team, individuals feel more motivated. It also improves morale of the team, keeping people engaged and invested in the project, knowing that what they do will directly impact the project's success.

Finally, with regard to the team, the factor of Idealized Influence becomes important in this phase. It is important for the project leader to set a good example for the rest of the team in terms of what they should be doing, and how they should be moving the project forward. Similar to motivation, this factor is about ensuring that the project is being considered as a priority and leading the team by example to ensure that work is being done with intention and integrity.

There are a few more factors considered of high importance during the execution phase. The next such factor is Balancing Objectives. Once again, something that was laid out in the planning phase but not entirely put to use, it is in this phase that the balancing of differing objectives will come into a more practical application for the project manager. During this phase, there are a multitude of competing demands, some that the project manager may not have even considered when planning out the project. Thus, it becomes important for the

leader to ensure that everything is completed, so priorities must be set for varying objectives throughout this phase.

The final factor that has particular prominence in this phase is being a motivational force for the project team. Projects can run into issues, drag out longer than anticipated, or go for long periods of time without seeing tangible results. This is when it becomes important for project leaders to continually motivate their staff so as to ensure that they remain on task, putting forth quality work for the duration of the project's life. Without the ability to motivate the team, a project may end in failure because key members of the team ceased to believe in the project or put quality time and work into it.

There are also a few factors that are still good to keep in mind when participating in the execution phase of the project. Innovation is of course still an important factor for this phase, as processes are still being developed and worked through. This innovation should be fostered by the managers, not only for themselves, but also in the team members, so that they use their innovative capabilities to forward the initiatives in the projects they are responsible for. Once again, Commitment to the Project is important in this phase. As was mentioned in the previous phase, it is important to stay committed to the project, even more so now as the project manager is interacting with the team members who should see that the project manager is completely on board with the project. Lastly, in the execution phase, the factor of Systematic Information Capturing may be useful. This is something that should be performed throughout this phase, however it falls more into the designation of the subsequent phase of monitoring and controlling, when it overlaps with the execution phase. There are no leadership factors that do not contribute, at least somewhat, to this phase.

6.3.4 The Monitoring and Controlling Phase

Next to be discussed is the monitoring and controlling phase. This phase, as mentioned earlier, does overlap with the other phases in some respects, as some of the tasks should be continually performed throughout the project lifecycle. It also has its stand-alone moment, and throughout both of these portions of the phase, a different set of leadership factors should be primarily focused on compared to other phases.

The first leadership factor that should be a major focus of the monitoring and controlling phase is Systematic Information Capturing. In this phase of the project, collecting information

on the successes, failures, and general performance metrics of the project as it progresses and once the deliverables have been completed. This means that capturing as much relevant information as possible in a systematic manner is crucial to the success metrics of this phase.

Another leadership factor that is important to this phase is Individualized Consideration. As previously discussed, in this phase it is important for any issues to be worked out before the deliverables are brought to the client or customer. When issues have been caused in part by team members, it is crucial that the project manager handle this in a way that uses the problem as a learning opportunity rather than placing blame or making team members feel small for the mistake that they made during the high-pressure execution phase. Individualized Consideration of team members will be pertinent in helping the project manager to get through difficult conversations without making people feel that they have ruined the project, instead empowering them to move forward and look for solutions to whatever bump was created.

A final leadership factor of Fast-action Decision Making is of great importance to this phase. As most projects run on deadlines, this phase may require decisions to be made quickly and efficiently when problems have presented themselves. So close to the end of the project, it is important to continue to stay on track, meaning that decisions with how to fix any issues must be made in a timely manner. They also must be made with quality and cost in mind, so there are a variety of factors that the project manager must take into account when making a judgement call on how to remedy an issue.

There are, of course, a number of leadership qualities that, while still important, need less energy devoted to them in this phase. These include being motivational to help keep employees engaged through the final stretch of the project, using innovation and fostering innovation in their employees – particularly when needing creative solutions to roadblocks, as well as Commitment to the Project. This final factor is increased in its importance at this phase than it was earlier because this phase is about ensuring the viability of the project, and double checking everything – things that will not be done if a manager does not have a high enough commitment level to the project. Most factors will be somewhat relevant to the project in this phase, however, the balancing of objectives may take a backseat given that the objectives of the project should have mostly been sorted out and completed by this stage in the project.

6.3.5 The Closing Phase

Finally, the closing phase of project lifecycle must be discussed. During this phase, the most valuable leadership factors are those that relate most to the processes that occur in the closing stage. Once again, this phase is often under-appreciated by project managers and thought of as a less valuable step in the process by some. The opposite is true though, and there are a number of different leadership factors that are useful for achieving any benefits that the project might see from this phase.

The first pertinent leadership factor is being Committed to the project. While this has been an important background factor for the entirety of the project, it is now, in the closing phase, that this factor needs to be emphasized. This is because the closing stage requires a number of steps and actions that, to some, may seem like going above and beyond what is necessary. However, in following the project through completely, performing all of the closing duties, a manager is not only proving their commitment to the project but ideally realising some of the benefits that will come from this action.

The other major leadership factor to be focused on during this phase is Systematic Information Capturing. In this phase, documents are written, finalised, and information is compiled to ensure that subsequent projects do not go through the same pitfalls. It is also when they gather information from the end user about the usability, functioning and generally the success of the output they created. This information can be used for future projects, or in order to tweak any issues that may be presenting themselves now that the project is being used for its intended purpose.

Some less relevant but still important leadership factors to pursue in the closing phase include Idealized Influence and Individualized Consideration of the team members who are still involved in the project at this stage. It will be important for the manager to include people and their strengths in the various tasks required by this stage, as well as lead by example when it comes to doing all of the necessary follow through tasks that may not appear to have immediate impact on the project. They should reward team members or thank them for their efforts that contributed to having the project runs that far. They should also continue to motivate their team members as this truly is the final stretch of the project and many people may start to lose interest and motivation now that the deliverables are completed and in use. Finally, the manager may require the use of the Fast-action Decision Making leadership factor,

when small issues or glitches present themselves in this final stage. Less useful leadership factors in this phase include Balancing Objectives and Integration of the team.

Table 15: Project Phase Culture and Leadership Factor Comparison

Phase	Cultural Highlights	Important Leadership Factors
Initiation	▪ Minimal number of people participating ▪ Collaborative and creative environment ▪ Open and informative relationship between project manager and other project key stakeholders	<u>High Importance:</u> ▪ Systematic Information Capturing ▪ Innovation ▪ Integration (Ideas) <u>Medium Importance:</u> ▪ Commitment to the Project ▪ Motivational
Planning	▪ Even fewer people involved ▪ More directive environment, as project manager has final word in the planning of the project ▪ Focused and research -oriented environment	<u>High Importance:</u> ▪ Integration (Ideas) ▪ Balancing Objectives ▪ Fast-action Decision Making <u>Medium Importance:</u> ▪ Innovative ▪ Commitment to the Project
Execution	▪ Increased hierarchal culture ▪ General culture present in the organization itself will be evident as more of the organization is involved in the project ▪ Adaptive capabilities of project manager and team will start to become necessary as roadblocks and unaccounted-for scenarios take form	<u>High Importance:</u> ▪ Fast-action Decision Making ▪ Intellectually Stimulating Team ▪ Integration (Team) ▪ Idealized Influence ▪ Individualized Consideration ▪ Balancing Objectives ▪ Motivational <u>Medium Importance:</u> ▪ Innovation ▪ Commitment to the Project ▪ Systematic Information Capturing

Phase	Cultural Highlights	Important Leadership Factors
Monitoring and Controlling	▪ Adaptive capabilities and flexibility of project manager and team members even more important in this phase	High Importance: ▪ Systematic Information Capturing ▪ Individualized Consideration ▪ Fast-action Decision Making Medium Importance: ▪ Commitment to the Project ▪ Motivational ▪ Innovative
Closing	▪ Culture of change ▪ Post-project reorganization can lead to period of readjustment, and concerns about work and individual roles within organization ▪ Can sometimes be rushed, important pieces neglected, in order to move quickly into the next project or agenda	High Importance: ▪ Commitment to the Project ▪ Systematic Information Capturing Medium Importance: ▪ Idealized Influence ▪ Individualized Consideration ▪ Motivational ▪ Fast-action Decision Making

6.3.6 Selection Criteria

While the above information has been compiled to determine the most useful leadership factors for each project lifecycle phase, it was also noted that there is variance present both in the culture of organizations and in the personalities of those involved in projects. Differences in projects will also cause variance between projects. Variance here means that what has been deemed most appropriate here may not work perfectly for every project. As a safety net feature to the research conducted, a set of criteria have been described to help project managers determine what leadership factors their project should employ in which phases. Each of the criterion should be considered and used to determine which leadership factors are most relevant to the project. These criteria can be found below in Table 16.

Table 16: Selection Criteria for Leadership Factors

Criteria Name	Criteria Description
Quantity of Team Members	The fewer individuals who are working in the team, the less some factors will be relevant. On the flip side of this, larger teams will require more of the team oriented leadership factors to be employed. Consider how many individuals are present in each phase to decide which leadership factors will be relevant during that phase.

Criteria Name	Criteria Description
Company and Client Culture	The company culture can have a very big impact on how the manager is expected to lead projects. There is sometimes the added need for the client's culture and expectations to be included in how the project is run. Especially if the client has a more hands on role in the project planning and/or completion.
Project Set-Up	Some projects will be more linear in the phases that are undertaken while others will be more muddled and intricate. This can change the leadership factors that are necessary for each phase. The more complex a project, the more important it will be for the project manager to support their team members in a leadership capacity.
Project Type	Consideration of the type of project being undertaken is important to determine which leadership factors will be necessary, as the phases may have different deliverables and objectives, which in turn will change the leadership factors required.
Phase Inclusion	The phases included above are not the only way of organizing a project into phases. A project may be divided into smaller phases, take out certain phases, or have an entirely different set of phases. This means that it will be necessary to make different decisions on which leadership factors should be included in each phase.
Level of Autonomy	How much autonomy the project requires of the team members at various phases within the project will have an impact on which leadership factors are more emphasized. For example, a project dealing with complex engineering concepts to develop deliverables may be led by a project manager who does not have the in-depth knowledge required for this and therefore will give more autonomy to their team in terms of developing solutions for the project. Projects requiring increased autonomy will require leaders that emphasize fostering innovation, motivating their employees, and focusing on the strengths of team members more so than projects where the project manager has more to input into the design and deliverables.

7. RESULTS AND ANALYSIS

Throughout the research project, a number of analysis tools were used in order to visualise the data that had been collected during the primary research: namely the interview, the survey and business case studies. NVivo software was used as an aid to code the qualitative interview data as well as a visualization tool for some of the coded data and research themes. For the survey data, Excel was used to organize the data and the graph tools used to visualize data in comparative graphs. Some of the themes being analyzed were focused on in the surveys data and so these themes will be discussed in section 7.1 while those themes presented in the interview data will be discussed in section 7.2. The following are the themes of focus:

1. Understanding of project success, project manager, leadership;
2. Top 10 leadership factors influencing project success;
3. Interconnections between the 10 leadership factors;
4. Impact of the 10 leadership factors on project success;
5. Project phase culture effect on the selection of leadership factors;
6. Importance of the 10 leadership factors in each project phase.

7.1 Surveys

For the surveys, Excel was employed as the primary analysis tool. The project managers were informed with the literature review performed and the descriptions of all leadership factors prior to completing the 1st survey. This was an important step to ensure that all project managers were on the same page and have the same understanding of the research topic and process, as well as the leadership factors definitions. The data used for the surveys was primarily quantitative data, and therefore did not need to be coded. The data was simply organized, and the outputs visualized using the diagram tools on Excel. Two of the six themes discussed in the research were analyzed using the outputs from the Surveys and Excel. These were theme 2, the top 10 leadership factors influencing project success, and theme 6, the importance of the 10 leadership factors in each project phase. Each of these themes will be discussed and summarized in the following subsections.

7.1.1 Theme 2: Top 10 leadership factors influencing project success

To ensure that the leadership factors chosen based on the performed literature review were in fact impactful on project success, the project managers from each of the five companies chosen as the research sample group were asked to rate a list of twenty leadership factors based on their perceived impact and importance to project success. In Figure 13 below, the overall results from the ratings given to each leadership factors from all of the five project managers can be seen (to view per company, see Figure 33, Figure 34, Figure 35, Figure 36, and Figure 37). The leadership factors marked by a green bar were those factors that were identified as the top ten by the project managers. The bars in blue then, are the leadership factors that did not make the cut for the top ten. For a more precious view of the data, Figure 32 shows another aggregated way to look at the data collected from all companies in one graph. As was identified from the literature review, the top ten leadership factors based on their impact on project success were Integration (Ideas and Teams), Idealized Influence, Motivational, Individualized Consideration, Fast-action Decision Making, Balancing Objectives, Systematic Information Capturing, Intellectually Stimulating Team, Innovative, and Commitment to the Project. It should be noted that all twenty of the leadership factors given as options to rate for the project managers were found in the literature review. Those that were identified, from the literature review, as the top ten were those that were mentioned most in depth in the literature.

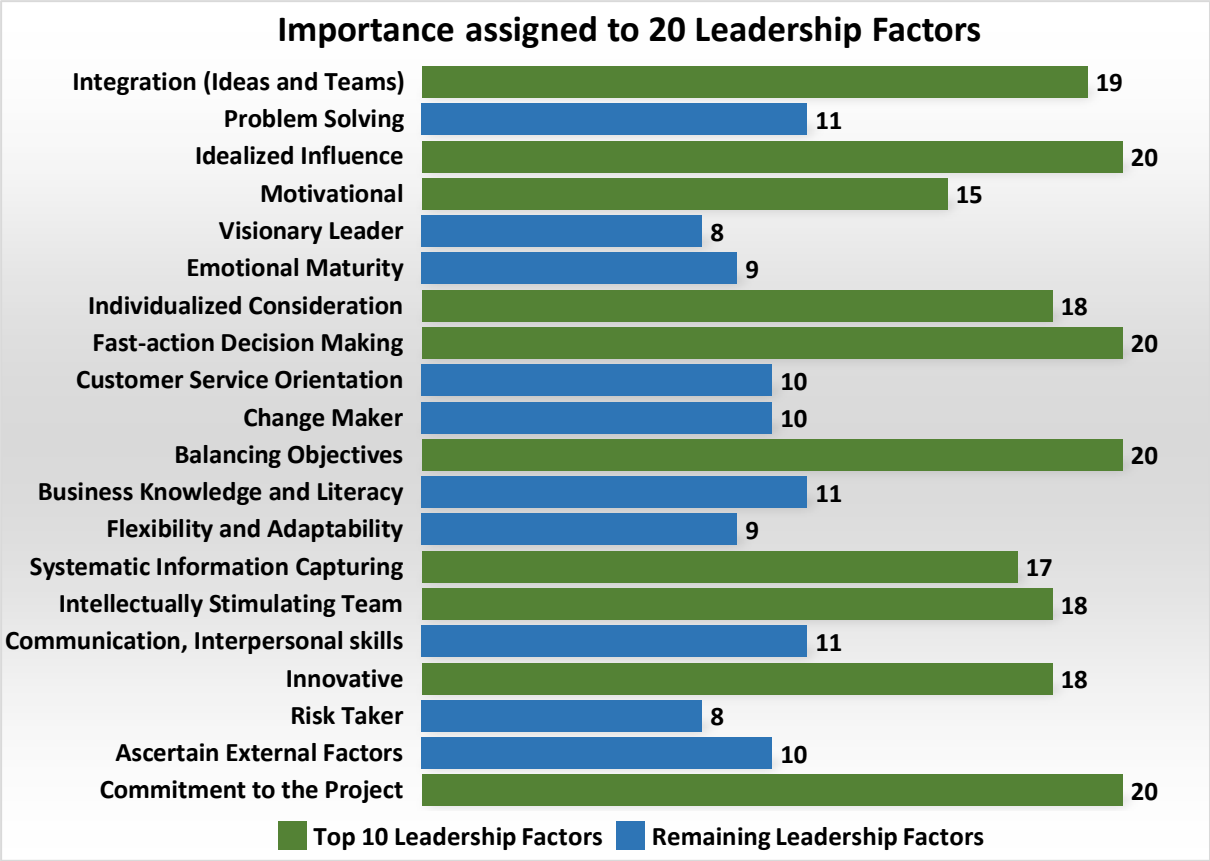

Figure 13: Importance assigned to 20 Identified Leadership Factors

Each company was given the list of 20 leadership factors that were seen from the literature to have a beneficial impact on project success. They were then asked from their practical experience to rate whether or not they would agree. A scale of 1-4 was used for the rating of the leadership factors, with 1 representing a disagreement on the leadership factor being beneficial, and four representing that they strongly agreed. The statements for two and three accordingly were neutral and agree. The breakdown of the ratings given by each company can be seen in Appendix I – 1st Survey (Before the Interview) and Appendix III – 2nd Survey (During the Interview). It should also be noted that these were ratings for the overall impact of each leadership factor on project success, not a break down of their importance within each phase of a project, which will be discussed in following section.

7.1.2 Theme 6: Importance of the 10 leadership factors in each project phase

Theme 6 analyzed how impactful each of the chosen ten leadership factors were in each project phase. For this analysis, each project manager was asked to give a rating once again from 1-4, this time on the importance that they placed on the impact each of the top 10 leadership factors had on the five project phases individually. From this, five graphs were

designed, giving an overall view of the importance that the project managers placed on each of the leadership factors in each phase. For levels of importance that reached an overall score of 18 points or higher, these were deemed to be the leadership factors that were of high importance during this phase. These leadership factors can be seen in the five figures below with green bars. Leadership factors reaching an overall score of 15-17 points were deemed to be of medium importance during the phase in question. These leadership factors can be seen below with blue bar. Any leadership factor not reaching an overall score of at least 15 points was deemed not of particular importance, i.e. low importance, to that phase in question. These leadership factors can be seen with grey bar.

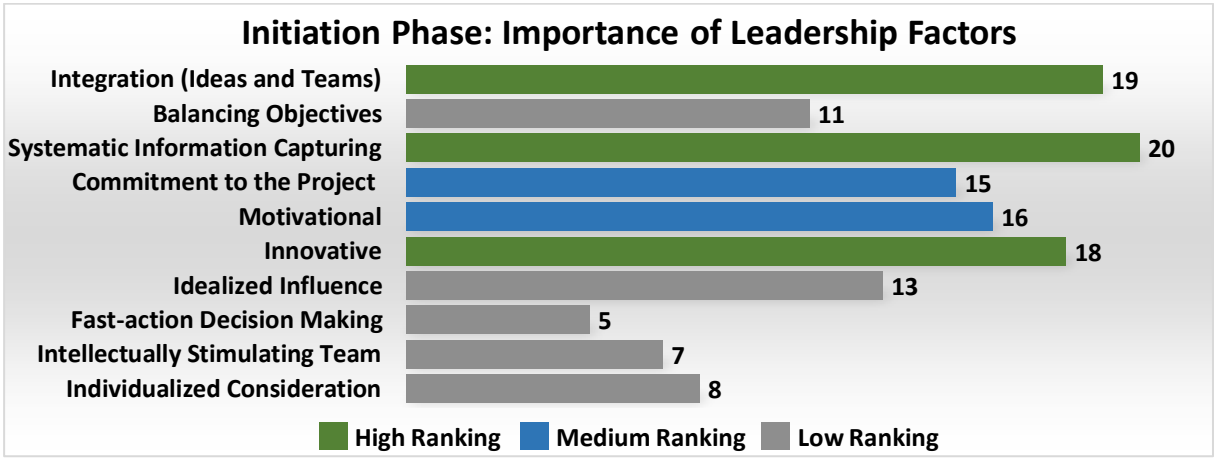

Figure 14: Initiation Phase - Importance of Leadership Factors

For the initiation phase, as indicated in Figure 14, Integration (Ideas and Teams), Systematic Information Capturing, and Innovative were the three leadership factors that reached levels of high importance. Commitment to the Project and Motivational took places of medium importance in this project phase, according to the project managers.

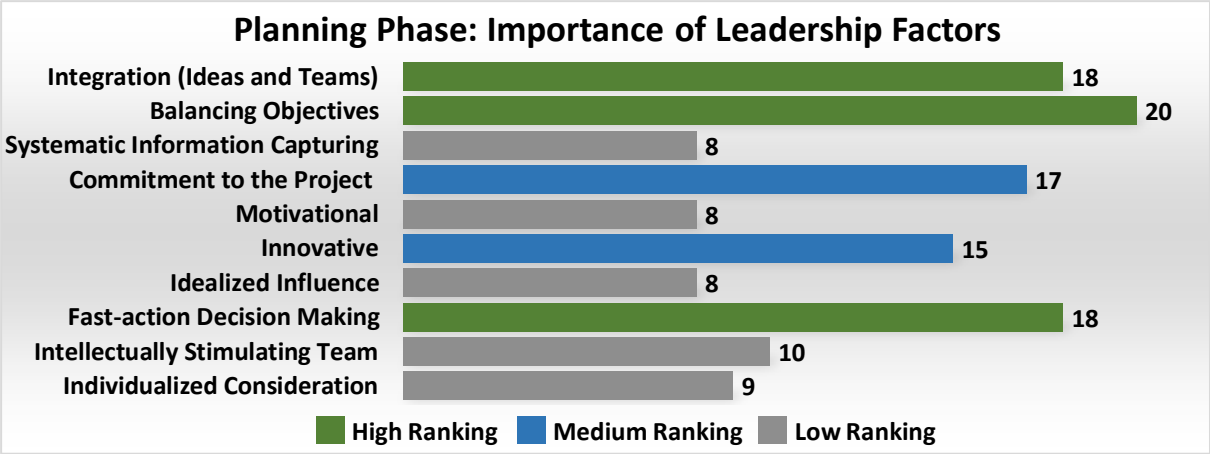

Figure 15: Planning Phase - Importance of Leadership Factors

For the Planning Phase, as indicated in Figure 15, the leadership factors of high importance shift slightly, with Integration (Ideas and Teams), Balancing Objectives, and Fast-action Decision Making having the most impact. This is followed by the Commitment to the Project and Innovative leadership factors who are indicated as having medium importance to this project phase.

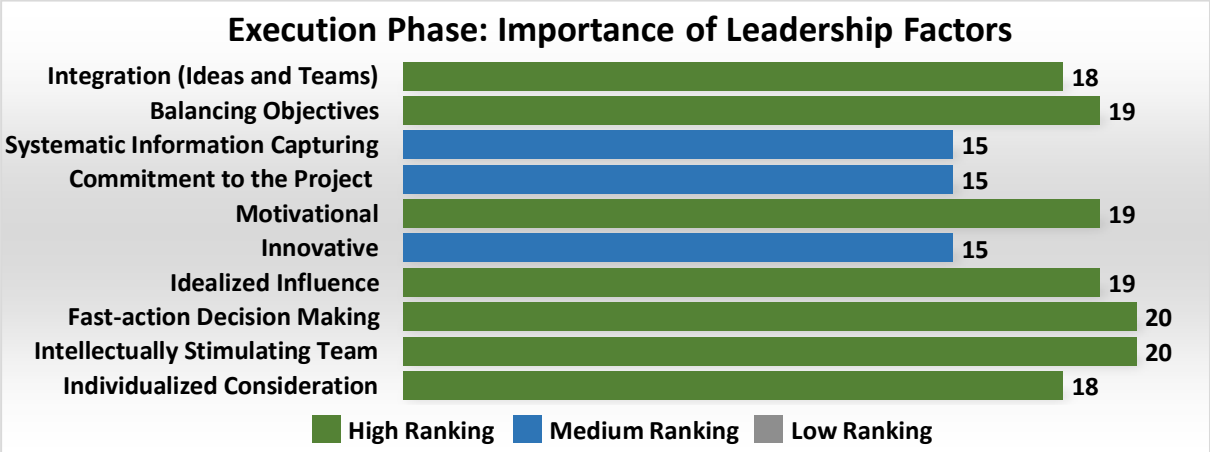

Figure 16: Execution Phase - Importance of Leadership Factors

The Execution Phase, as indicated in Figure 16, is interesting because it only contains leadership factors that were scored above a 15 overall, meaning that every leadership factor is important throughout this phase. The only three leadership factors that are slotted as merely 'important' are Systematic Information Capturing, Commitment to the Project, and Innovative. Every other leadership factor is identified by the project managers as being very important to the success of the project during the execution phase.

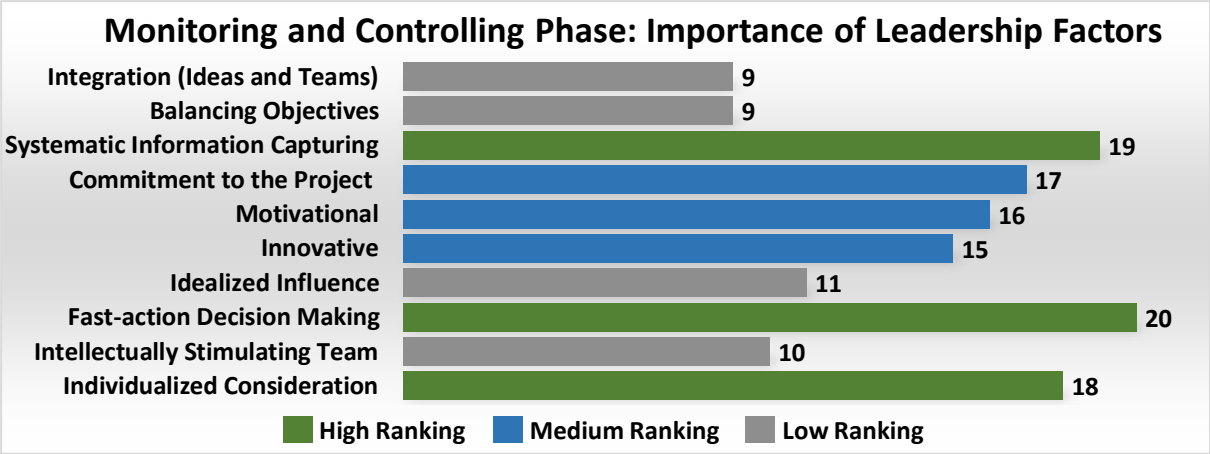

Figure 17: Monitoring and Controlling Phase - Importance of Leadership Factors

During the Monitoring and Controlling Phase, as indicated in Figure 17, the top three leadership factor shift drastically. At this point, those leadership factors deemed to be of very important value to the project phase are Systematic Information Capturing, Fast-action Decision Making, and Individualized Consideration. Those leadership factors merely deemed important were Commitment to the Project, Motivational, and Innovative, while the remaining four leadership factors were scored lower than 15 points overall.

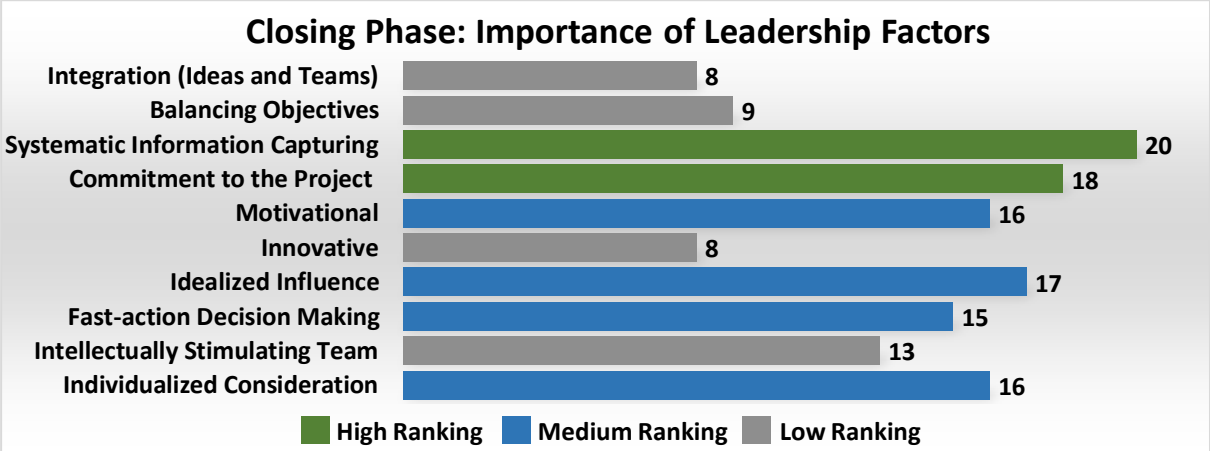

Figure 18: Closing Phase - Importance of Leadership Factors

Finally, during the Closing Phase, as indicated in Figure 18, there are only two leadership factors that were deemed to have a high level of importance to the phase, those being Systematic Information Capturing and Commitment to the Project. In terms of leadership factors deemed to have an average level of importance to the project, there were four: Motivational, Idealized Influence, Fast-action Decision Making, and Individualized Consideration.

Another way to look at the results of the survey is shown below in Figure 19. The diagram shows an overall importance rating of the 10 leadership factors by project phase.

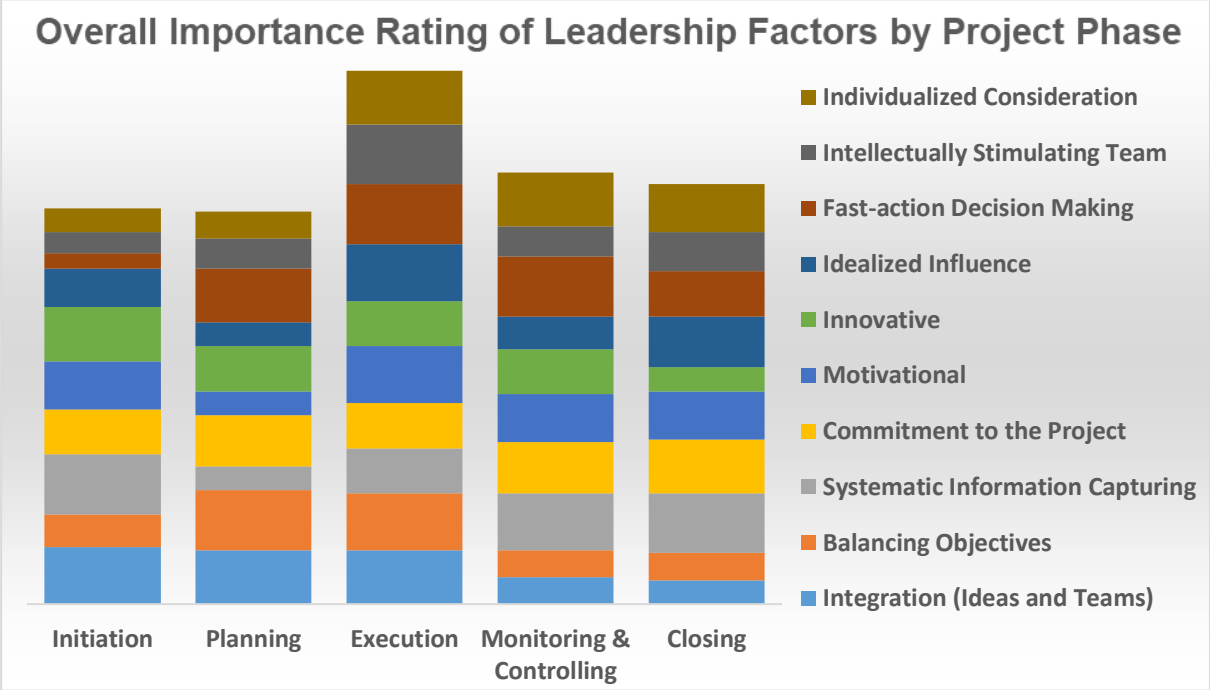

Figure 19: Overall Importance Rating of Leadership Factors by Project Phase

7.2 Interviews

Interviews were conducted with the five project managers chosen as the sample individuals. Each interview lasted 45 minutes to 1 full hour. The interview included 6 open-end questions and ended by requesting the project manager to mention, out of his experience and knowledge, any leadership factors that was missing during the interview. None of the project managers spoke about any other leadership factors than the 10 discussed ones. Therefore, the question and the answers of the project managers were not documented. All interviews transcripts can be found in Appendix II – Interview Transcripts. As mentioned earlier, interview transcripts were all inputted into NVivo for analysis purpose. The interviews were designed to focus on a number of the themes that had been identified through the literature as points of interest in the research. Pointed questions were asked to each of the project managers in order to gain insight on each of these themes. These themes will be discussed in depth in this section.

From the interview transcriptions, a word cloud, generated by NVivo, was created in order to visualize the frequency with which certain words were employed. This word cloud can be seen

below in Figure 20, and it is clear that there are a few words that stand out the most. Project is the biggest word in the cloud, corresponding to the large number of times that word was employed by the project managers during the interviews. Important, Leadership, Manager, Success, Phase, and Team are the words that next appear most apparent in the cloud. Once again corresponding to the frequency with which they were used during the interviews. All 10 leadership factors were mentioned repeatedly during all interviews. The word cloud concludes that the 10 leadership factors relates to the success of the project. In addition, the culture of each project phase affects the selection of leadership factors in a way that would contribute more to the success of the project as a whole.

Figure 20: Interviews Word Cloud

As mentioned, the NVivo analysis tool was used to code the interview data, mainly the answers of the open-end questions. In addition, the three business cases were analyzed using NVivo and the coding added to the codes developed from the interview files. The business case studies were part of Question 5 answer, if a project manager volunteered to speak details that will serve as a business case study in our research work. Among the five project managers, three of them had decided to go that route and provide us with details that served us in developing business case studies, i.e. real-life situations. There were four themes that were primarily analyzed using the NVivo software, and they will be discussed in more depth in the following subsections. Those themes are as follow:

- Theme 1, Understanding project success, project manager, and leadership;
- Theme 3, Interconnections between the 10 leadership factors;
- Theme 4, Impact of the 10 leadership factors on project success;
- Theme 5, Project phase culture effect on the selection of leadership factors.

7.2.1 Theme 1: Understanding project success, project manager, and leadership

The first theme that was identified was a three-part theme focused on understanding project success, the characteristics that make a good project manager, and the qualities that make a good leader with regards to project management. After gathering what the literature says about project success, this research work aimed to understand, from the experience of the project managers who were interviewed, the meaning of project success while taking into consideration stakeholders' point of view. In the sample of this research work, project success was precisely measured based on the answers received by the project managers who were being interviewed. Prior to the interview, the project managers were called and asked to base their answers during the interview on a minimum of seven projects which had been deemed successful by not only themselves, but also their company, the project team, the customer the project was intended to benefit, and the fact that the project had fulfilled its purpose. To ensure that both the interviewer and the project managers were on the same page, it was asked that the measurement of success be based on metrics such as the overall results, the effectiveness and efficiency of the project and on customer satisfaction with the end results. In another words, the stakeholder's point of view was a major focus in answering the meaning of project success.

For the first part of the theme, project success, the project managers were asked to answer an open-ended question about what they think makes a project successful. NVivo was used to code the responses and a number of key sub-themes appeared in the answers given by the project managers. These sub-themes were that the objectives and goals were attained, there was a benefit to the end user, they maintained good relationships throughout the project lifecycle, and they were able to stay within the project scope. The following bar graph, Figure 21, gives a comparison of the frequency with which each of these factors was mentioned over the five interviews.

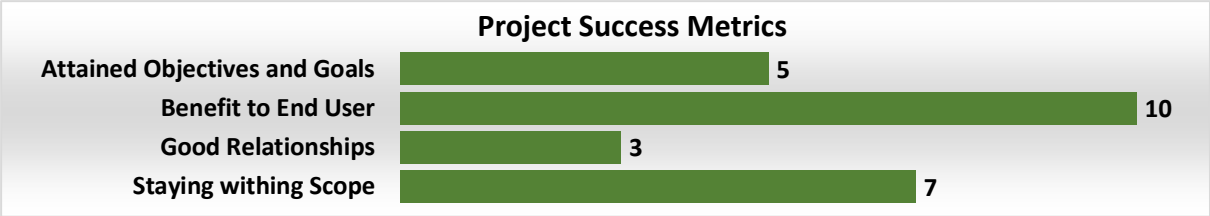

Figure 21: Project Success Metrics

As is apparent from Figure 21, the most commonly mentioned attribute to identifying a project as successful was that there had to be a benefit to the end user. If the end user was unable to make use of the project output(s) then the project would not be deemed successful. Also, frequently mentioned was the need to stay within the scope of the project, that being the time and budget requirements that were laid out when the project was in its planning phase. It is key to mention here that the frequency of this factor being mentioned is misleading as many of the project managers spoke about staying within the scope as a factor that would only determine if a project was deemed successful if the project ended up so far outside of the designated scope as to be detrimental to the organization, or merely excessively over budget or over time.

The second part to this theme is the understanding gained on what makes a good project manager. Once again, this sub-theme was analyzed in NVivo and a number of characteristics appeared throughout the answers given by the project managers. The characteristics coded were as follows: Ability to Balance Demands, "Adaptability, Versatility, Flexibility", Ability to be a Good Leader, Innovative, Keeping a Focus on the End Goal, Knowledge Sharing, and Team Focus. A visual representation comparing the frequency of each coded characteristic can be seen below in Figure 22.

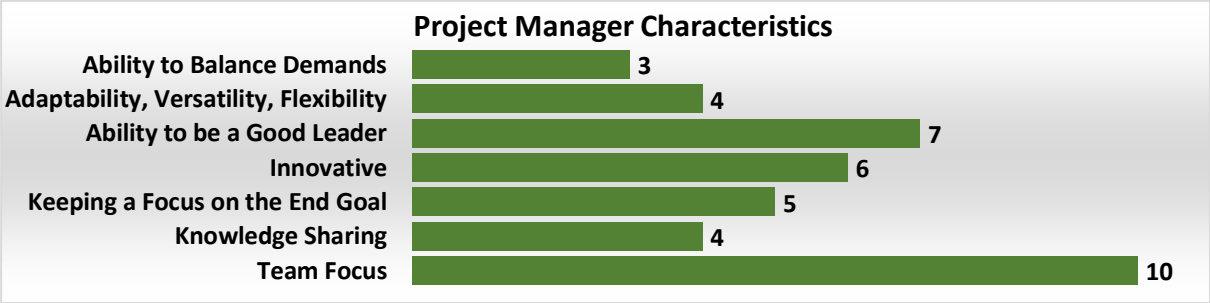

Figure 22: Project Manager Characteristics

The characteristic that was mentioned most often throughout the interviews was the ability for a project manager to have a team-oriented focus. This was followed next by the ability to

be a good leader and to have innovative capabilities. From this comparative analysis it is possible to see some of the connections to the ten leadership factors, something that will be touched upon more with regards to another one of the identified themes for the research.

Finally, the third part of this theme is to understand what makes a good leader when it comes to project management. NVivo analysis was used for coding the interview question pertaining to this sub-theme, and a number of qualities were identified from the answers given by the project managers. These qualities are as follows: Ability to Successfully Complete Projects, "Adaptability, Versatility, Flexibility", Big Picture Thinking, Innovation, Taking into account Firm Culture, and Team and Client Focused. One thing to note is the similarity of and the interconnections between the qualities identified for a leader and the characteristics identified for a project manager. Figure 23 can be used as a visualization tool for the differences in frequencies between the identified qualities.

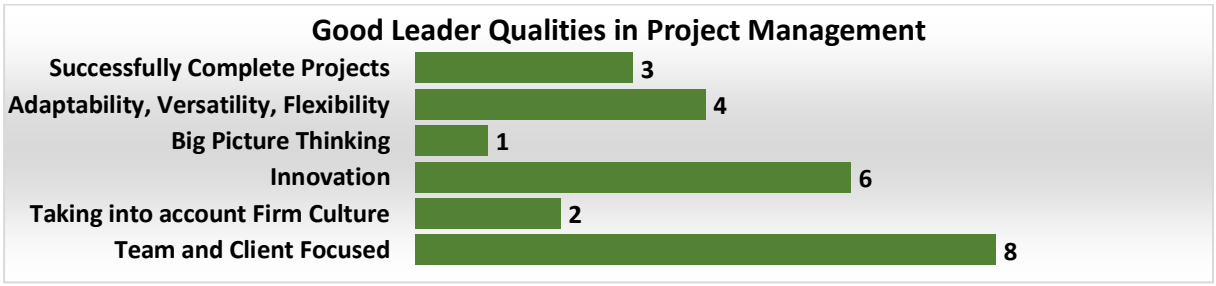

Figure 23: Qualities of a Good Leader in Project Management

7.2.2 Theme 3: Interconnections between the 10 leadership factors

The next theme that was analyzed using the interview questions was the interconnections between the ten leadership factors. The project managers were asked to elaborate on any interconnections between the leadership factors that they thought were beneficial to the success of projects. From this question, a number of interconnections were discussed. Each project manager discussed slightly different interconnection so that a wide range of interconnections were covered. These interconnections backed up and expanded upon the interconnections that had been discussed in the literature. The full transcripts of the interconnections can be seen in Appendix II – Interview Transcripts.

A diagram of the interconnections mentioned by the project managers during question four in the interview sessions can be seen below in Figure 24. In the diagram, interconnection have been marked by a line between leadership factors. The thinner lines depict those

interconnections that were only mentioned once, while the thicker lines depict those interconnections that were mentioned at least twice. The interconnections appeared between the leadership factors concludes the power of combining two or three leadership factors together in order to receive a higher rate of project success.

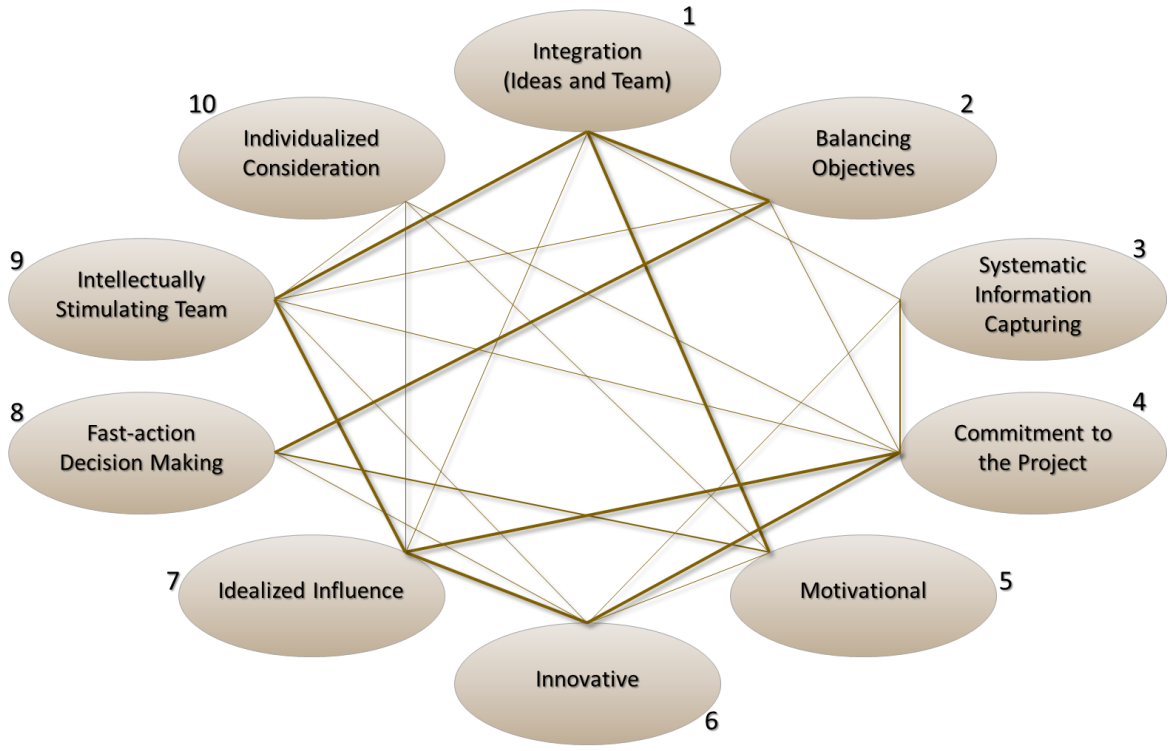

Figure 24: Interconnection of Leadership Factors based on Interviews

7.2.3 Theme 4: Impact of the 10 leadership factors on project success

As previously mentioned in theme 1, the interview questions answered by the project managers touched on a number of different ways in which leadership factors were positively impacting project success. While the benefit of each leadership factor was linked throughout the interviews to project success, the benefits to project success of employing multiple leadership factors as a functional unit was also discussed. This ties in nicely to the previously discussed themes as much of the content overlapped. This overlap, both in the employment of singular leadership factors as well as leadership factors employed together to increase success. Essentially, the results from the interviews performed with project managers in industry companies backed up the information that had been found in the research conducted prior to this research study. The impact of a leadership factor is a combination of a variety of elements. These include the analysis, decisions, actions, and any other form of expression that

a project manager can take during the project that impacts the project, either negatively or positively, in some form. This impact can be seen during the processes, operations, performance of the team or project, or any other elements of the project.

There are multiple effects from a set of leadership factors and so to split and isolate these becomes a matter of assessing each leadership factor individually. This was done by employing the questions designated for the leadership factors as well as the tools available for coding and dissecting information. This was then used to relate each factor back to the practical results of the project to understand where causes and effects on project success have taken place.

While there are environmental factors that will impact the success of a project, these are external circumstances that are impacting a project, roadblocks of a sort. Leadership factors on the other hand are characteristics and traits that a project manager has and can use to impact the project. Environmental factors are external pressures, but a project manager can use their internal leadership skills to navigate these pressures so that project is successfully completed. As they are impacting projects from different perspectives (internally vs. externally) they are much simpler to untangle from one another and differentiate. A project can fail because of environmental circumstances even with a project manager who is utilizing all of their available leadership factors to mitigate the circumstantial pressure, and likewise a perfect environmental atmosphere for success can be thwarted by a project manager who does not lead the team properly. These factors though can be easily isolated.

In Figure 25, four metrics that the interviewed project managers use as identifiers of whether a project has succeeded can be seen. For each of the metrics, the number attached is the number of times that it was mentioned by a project manager. When looking to the appendix for the transcripts of the sections of the interviews discussing leadership factors, the below four metrics are mentioned frequently in relation to how a leadership factor impacts project success. As can be seen below, the biggest indicator of having successfully completed a project for project managers is when the project is beneficial to the end user.

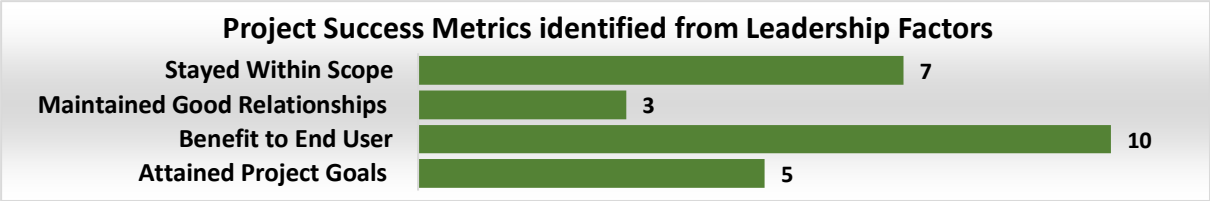

Figure 25: Project Success Metrics identified from Leadership Factors

7.2.4 Theme 5: Project phase culture effect on the selection of leadership factors

The culture of each project phase was discussed in the interviews with each project manager. The project managers have identified a number of cultural and atmospheric aspects that they would associate with each of the five project phases. This was important to identify because it gave an indication of the differences in the phases that might lead to the varying importance and impact of each of the leadership factors across each phase. This firsthand knowledge from practicing project managers from a variety of industries served as primary sources for gaining a better understanding of the cultural differences between the phases – something that has not been research in depth to date. Thus, a connection between the culture and the leadership factors could be made, and an understanding gained to the reason behind why some factors were more impactful in some phases than in others.

It is important to understand and to identify the contribution of each leadership factor for the success of a project phase. The meaning of contribution here is the impact that a single factor had on the success of a particular phase. This way, it is easier to identify which factors are most impactful at each project phase and which are not as useful. As projects can be broken down into phases, it seems relevant to the research of project success to also break projects down into their phases while dissecting what makes or breaks a project. Even if we identify that certain leadership factors are useful for project in general, it may be found that a factor is being used in an untimely manner or in a phase where it is not very beneficial. As such, our goal was to identify during what phases leadership factors came into the biggest play and would therefore have the biggest impact on phase and project success. It can absolutely be argued that some project phases can be successful while the overall project is counted as a failure. For example, if a project does outstanding in its initiation and planning phases but then flounders during the execution phase, the project may be counted as a failure even though the first two phases were successful in what they set out to accomplish.

Below, the five following figures -- Figure 26, Figure 27, Figure 28, Figure 29, and Figure 30 -- depict the sub-themes picked up in each phase and compare the prevalence of each identified sub-theme. The full interview answers and the specifics of what each project manager said can be found in Appendix II – Interview Transcripts.

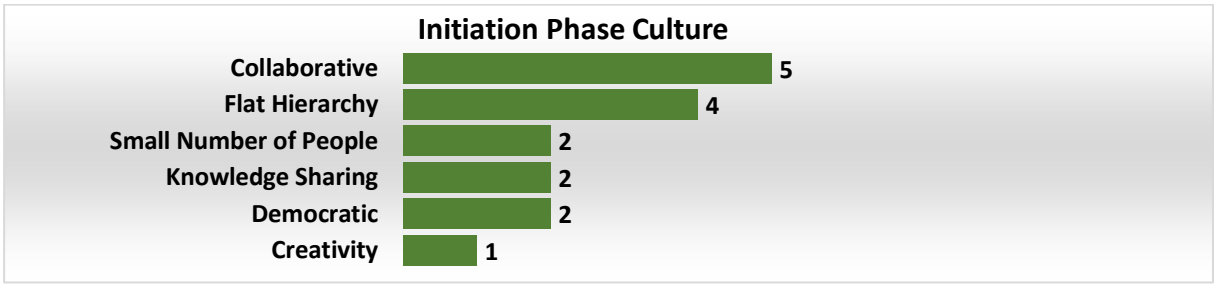

Figure 26: Initiation Phase Culture

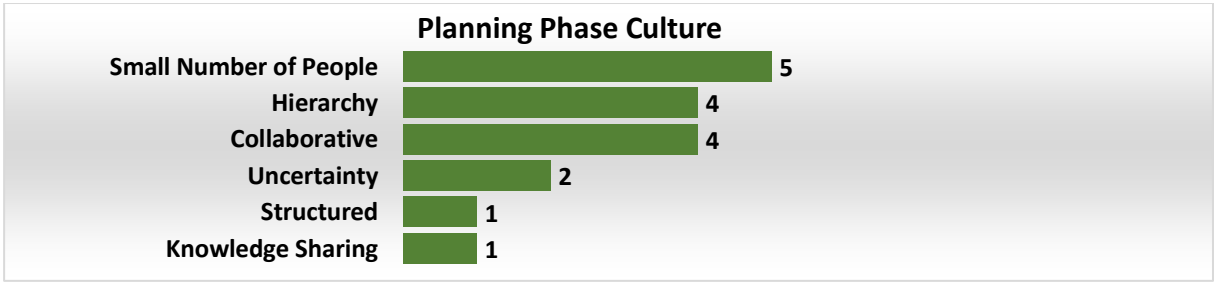

Figure 27: Planning Phase Culture

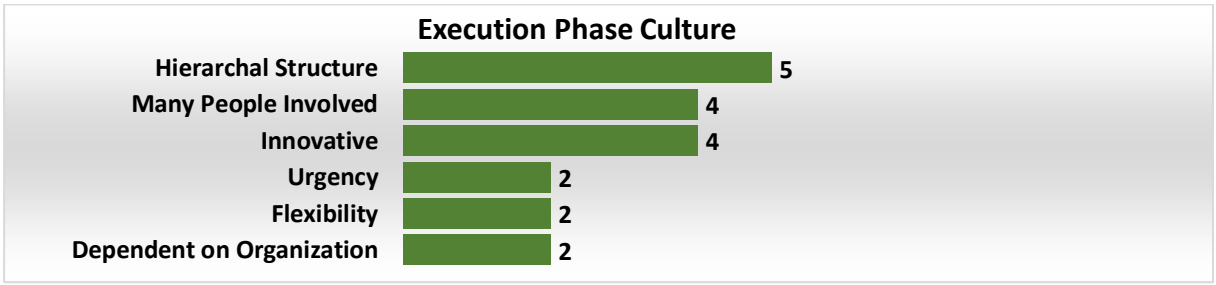

Figure 28: Execution Phase Culture

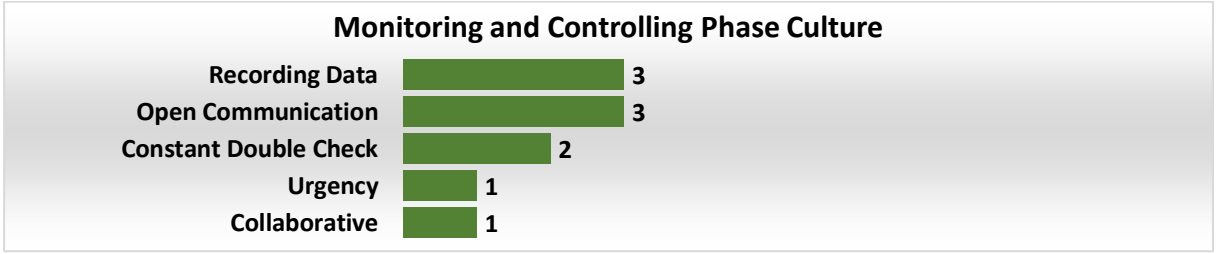

Figure 29: Monitoring and Controlling Phase Culture

Figure 30: Closing Phase Culture

More graphs presenting different ways of visualizing the data related to surveys results can be viewed in Appendix I – 1st Survey (Before the Interview) and Appendix III – 2nd Survey (During the Interview).

7.3 Business Case Studies

Three business cases were identified, each pertaining to a different project phase. Within each business case, a problem was identified that may present itself during the phase in question. For each of the problems, numerous leadership factors were identified – from the list of leadership factors deemed most beneficial to the phase in question. Using the leadership factors that were found to be most useful to the specific scenarios in question, solutions were discussed as well as the value that using those leadership factors brought to the business. Table 17 outlines the major points of each of business cases in a layout which is enables the reader to easily compare each of the cases. The full business cases developed can be found in Appendix IV – Business Case Studies.

Table 17: Business Case Comparison

#	Problem	Phase / Leadership Factors	Solution	Business Value
1	A lack of internal knowledge required that an external team be brought on to help with the knowledge gap. Differences in approaches, knowledge, and a lack of understanding of the hiring company's culture	Execution ▪ Integration (Team) ▪ Individualized Consideration ▪ Balancing Objectives	A multi-tiered leadership factor integration approach was employed. The first step was embedding a subject matter expert into each team (internal on external team and vice versa). Second was using Individualized Consideration to aid the external team to focus on their	Team members gained valuable knowledge, were more motivated to do better work, and were more efficient. In addition, they gained a high reputation as a company that is easy to work with and provides support to outside contractors.

#	Problem	Phase / Leadership Factors	Solution	Business Value
	caused issues with a creeping scope, coordination and cooperation.		strengths. Finally, the project manager balanced objectives to ensure that timeframes were met.	
2	Key stakeholders in the various departments of the organization were gathered to provide input to develop the project scope and metrics. With varying perspectives on the organization, too many ideas and requests were being made, with little to no compromise. Conflicting ideas were also being presented.	Planning ▪ Integration (ideas) ▪ Innovation	First the project manager took a meeting to reiterate the project purpose and objectives to reset everyone's minds about why they were needed. Then the project manager asked the department leads to write out their ideas so that everyone had concrete inputs. One-on-one meeting were had with each lead and any ideas brought forth as 'key' needed to be backed up with evidence. Once the truly important ideas had been found, group discussions were reinstated.	The involvement of the perspectives of the department leads was crucial to ensure important information was not overlooked when creating the scope, so having the leads work together as a team and keep the project objective at the forefront of their minds greatly increased the chance of success for the project.

#	Problem	Phase / Leadership Factors	Solution	Business Value
3	Not all team members were doing a proper job of recording information as relevant to the project metrics and plan alignment.	Monitoring and Controlling ▪ Systematic Information Capturing ▪ Motivation	A document with guidelines for collecting information was developed and given to each team member so that they could easily complete only the necessary information. Motivational tactics such as incentives and recognition were used to help boost employee morale.	Boosting employee morale made the project run more efficiently, effectively, and engaged employees enough that they were interested in completing new projects that may appear. In addition, forms helped to structure the responsibilities, so team members were not confused and thus doing the required work. This cut down on time spent fixing things retroactively.

A mix of major and minor leadership factors were employed in each business case study discussed. Not every major leadership factor presented as important for the project phase was necessarily relevant to the particular business cases used. This is because the requirements and tasks for each phase cover a large scope. Therefore, while not every single leadership factor identified will be useful in every scenario faced by project managers during that phase, there will be some scenarios that require each of the identified leadership factors. This is also true for the minor leadership factors identified. Often a mix of a number of leadership factors will, however, be useful for a particular scenario. There may also be scenarios in which none of the major leadership factors identified as crucial to that phase are employed. Once again, it is important to note that the leadership factors identified for the phases are not going to fit every single possible scenario presented to project managers. The sheer variety of projects, organizations, and project phase activities, means that these leadership factors – phase identification tool, should be used as a guide and tweaked as necessary to fit the organization or project demands.

8. CONCLUSIONS AND FUTURE WORK

In this final chapter, the research project will be summarized and tied together, as well as the research usage and benefits. The research embarked upon at the beginning of this project was an important step towards closing some of the research gaps that have so far been present in the literature with regards to project success and its link to leadership factors. It should be noted however, that this research project has not definitively provided the answers, or fully closed the research gaps mentioned throughout the project. This is merely the first step and has opened the door to many future opportunities to dive further into the topic of leadership factors, cultural differences in project and project phases, among others. This will also be discussed in this chapter.

8.1 Executive Summary

In today's globalized and highly knowledge-driven society, it is important for firms to be continuously looking to stay competitive in their market. This can be achieved in a number of different ways, one such route being the use of knowledge and human based resources. In particular, the employment of leadership can be seen as a way to achieve success, no matter what industry an organization operates within. When discussing the manufacturing industry, leadership is just as important as in any other industry and its usefulness to improving the chance of success in change-driven projects should not be overlooked.

Sadly, the research with regards to leadership, especially in SMEs and the manufacturing industry, is lacking significantly. This includes a number of specific areas of interest with regards to the impact and importance of leadership within firms, identifying specific factors that lead to a good leader, and the impact that those factors have on projects and on specific project phases. Much of the research performed prior to this study looks at leadership in a much broader sense. Often it targets larger corporations and the leadership trends and factors that are most useful for those types of organizations. This research work looks to bridge this knowledge gap by identifying leadership factors through both a literature review and performing primary research on the impact that these leadership factors have on project success and project phases, while taking into consideration the culture of each project phase, more specifically.

The research question of this study was 'Which leadership factors will be most beneficial to the success of IT projects in the manufacturing industry and when throughout the project lifecycle will each factor have the most impact on project success?'. As mentioned, this was done by performing a literature review and through primary research performed on five project managers, completed through two surveys and an interview, as well as business case studies. In addition, areas of interest were analyzed throughout the process of the research and three milestones have been set in order to achieve the main objective previously mentioned. These three milestones were as follows: to identify the top ten leadership factors for a project manager, to link the leadership factors to project phases by determining which factors are most important to each phase, and to present the impact that the leadership factors have on project success.

Many manufacturing organizations perform IT projects to keep their firms competitive, and sadly, these projects generally have high failure rates. This means there is a need to understand the role that leadership plays in projects and how it can be altered and improved to further the chances of projects succeeding. This research work aimed to address this issue through two sections. To start, a literature review was performed to gather qualitative secondary data. Twenty leadership factors were identified through this research, and background information was gathered on the manufacturing industry, SMEs, leadership, project management, and project phases. The second section of the research was that of primary data research performed through two surveys and one interview for each of five participating project managers in Ontario, Canada. Each project manager was given the first survey, where they were asked to rate the twenty leadership factors on their perceived impact on project success to identify the top ten leadership factors. A second survey was given out during the interview to gain first-hand knowledge on a few more of the relevant aspects of the research, such as the importance of each of the top ten leadership factor to each project phase. An interview was performed with each project manager to gain more in-depth qualitative data. The data from the surveys was laid out in excel and where tools were used to visualize the relevant information in the form of bar graphs. The interviews were transcribed and coded using NVivo software, and then NVivo visualization were applied in order to present some of the interview data.

Three business cases were also discussed, each one detailing a separate project phase from the perspective of a different project manager. These business cases provided valuable insight into some of the leadership factors in the chosen project phases. The performed interviews and surveys supported the literature review conclusions. From the primary and secondary research performed, it was seen that the ten identified leadership factors had a positive impact on project success. Furthermore, the interviews provided first-hand accounts of the culture seen in the five project phases, as well as an indication of when, during the project lifecycle, these ten leadership factors would be most impactful and most beneficial to the success rate of projects.

To conclude, the leadership factors that were identified in this research work as being the most beneficial to the success of IT projects in the manufacturing industry are listed below in Table 18.

Table 18: Leadership Factors – High Level Description

Leadership Factor	High Level Description
Integration (Ideas and Team)	The ability to integrate ideas of the team members, and to integrate team members as individuals having different backgrounds.
Balancing Objectives	The ability to find a balance to the project's varying objectives during all phases of the project.
Systematic Information Capturing	The ability to catalogue the project – what worked, what did not work, what steps were taken throughout the project, the process that was employed, which projects ultimately failed and how.
Commitment to the Project	The ability to be committed to the project in all times and at all levels, and being able to pass this commitment to the teams involved.
Motivational	The ability to motivate the team so they provide their highest quality of work, even at the hardest moments in the project.
Innovative	The ability to employ innovation in the project atmosphere so the team members can help adding a greater value to the project.
Idealized Influence	The ability to be a positive role models to the team members who, in many occasions, follow their leader's attitudes and behaviors towards the project.

Leadership Factor	High Level Description
Fast-action Decision Making	The ability to be not only a strong decision maker, but one that knows how quick the decision needs to be made to avoid any impact on the project's success.
Intellectually Stimulating Team	The ability to have a positive and an effective atmosphere of thoughts between team members and to know how and when to stimulate their thoughts.
Individualized Consideration	The ability to recognize and utilize the strengths and weaknesses of each team member to the advantage of the project so they feel more valuable and productive.

As an advantage to this research, there was an opportunity to understand the interconnections between the ten leadership factors. Figure 31 shows the interconnections found through the literature review and the interviews conducted. The solid line indicates a direct connection, and a dotted line indicate an indirect connection.

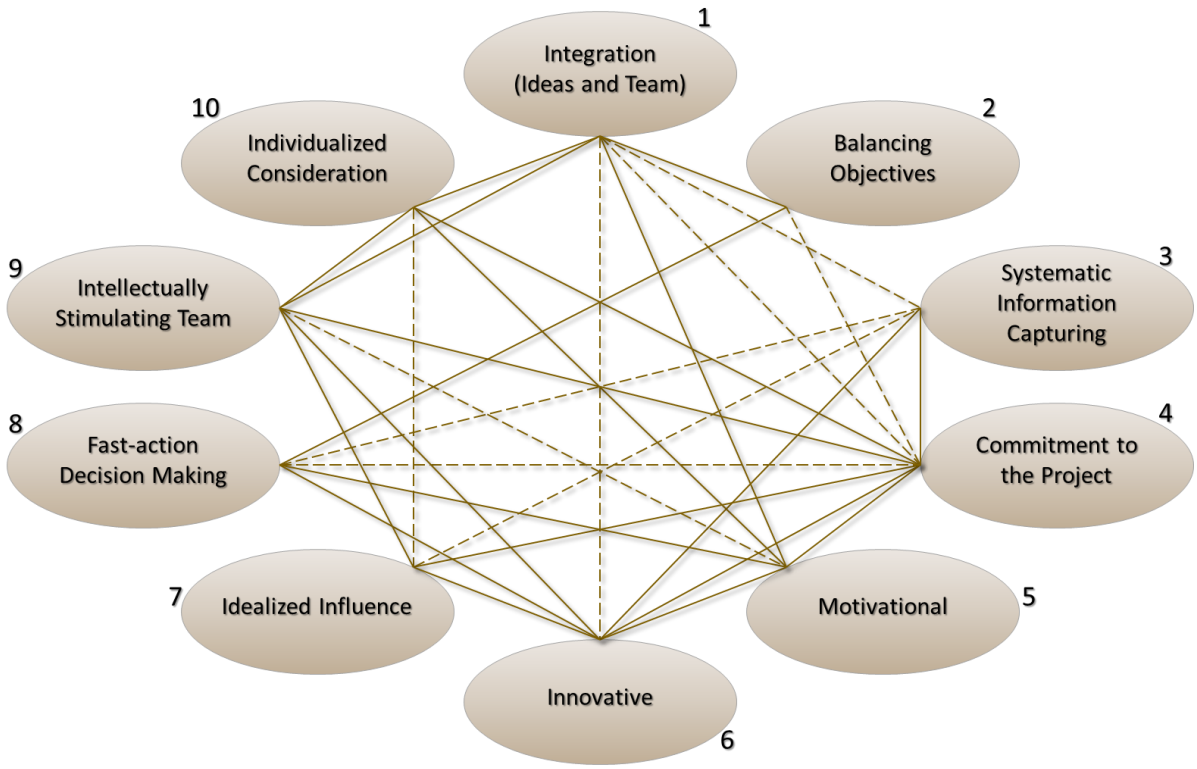

Figure 31: Interconnections between leadership factors

The second half of the research question stated as follows: When throughout the project lifecycle will each factor have the most impact on project success? The answer to this part of the research question is presented in Table 19. The table explains the cultural highlights of

each project phase and the important leadership factors to employ. The importance comes into two levels: High (critical to employ) and Medium (good to employ, depending on circumstances).

Table 19: Project Phase Culture and Leadership Factor Comparison

Phase	Cultural Highlights	Important Leadership Factors
Initiation	▪ Minimal number of people participating ▪ Collaborative and creative environment ▪ Open and informative relationship between project manager and other project key stakeholders	<u>High Importance:</u> ▪ Systematic Information Capturing ▪ Innovation ▪ Integration (Ideas) <u>Medium Importance:</u> ▪ Commitment to the Project ▪ Motivational
Planning	▪ Even fewer people involved ▪ More directive environment, as project manager has final word in the planning of the project ▪ Focused and research - oriented environment	<u>High Importance:</u> ▪ Integration (Ideas) ▪ Balancing Objectives ▪ Fast-action Decision Making <u>Medium Importance:</u> ▪ Innovative ▪ Commitment to the Project
Execution	▪ Increased hierarchal culture ▪ General culture present in the organization itself will be evident as more of the organization is involved in the project ▪ Adaptive capabilities of project manager and team will start to become necessary as roadblocks and unaccounted-for scenarios take form	<u>High Importance:</u> ▪ Fast-action Decision Making ▪ Intellectually Stimulating Team ▪ Integration (Team) ▪ Idealized Influence ▪ Individualized Consideration ▪ Balancing Objectives ▪ Motivational <u>Medium Importance:</u> ▪ Innovation ▪ Commitment to the Project ▪ Systematic Information Capturing

Phase	Cultural Highlights	Important Leadership Factors
Monitoring and Controlling	▪ Adaptive capabilities and flexibility of project manager and team members even more important in this phase	<u>High Importance:</u> ▪ Systematic Information Capturing ▪ Individualized Consideration ▪ Fast-action Decision Making <u>Medium Importance:</u> ▪ Commitment to the Project ▪ Motivational ▪ Innovative
Closing	▪ Culture of change ▪ Post-project reorganization can lead to period of readjustment, and concerns about work and individual roles within organization ▪ Can sometimes be rushed, important pieces neglected, in order to move quickly into the next project or agenda	<u>High Importance:</u> ▪ Commitment to the Project ▪ Systematic Information Capturing <u>Medium Importance:</u> ▪ Idealized Influence ▪ Individualized Consideration ▪ Motivational ▪ Fast-action Decision Making

A researcher called Ralf Müller has related work to this research work, and his work confirmed the theory that leadership does play a role in the success of projects and that project managers are an important factor towards implementing this role. Furthermore, the different styles of leadership, the leadership capabilities and the competency of project managers will be beneficial for different projects – that means, not all project managers will be an appropriate fit for every type of project. Müller has concluded the needs to train project managers in leadership and carefully assign them to projects that fits with their leadership capabilities in order to gain the most value out of them in a way to contribute to a higher rate of success.

Due to the many knowledge gaps in the literature, the study and the primary research conducted had a number of limitations. Due to the research gaps, a lot of the information compiled in the literature review was a mixture of SMEs data from other industries, data pertaining to large corporations, with a few sources dealing specifically with SMEs in the manufacturing industry. This meant that some of the information was pieced together or inferenced. In addition, information pertaining to the impact of leadership was often directly

discussing project management which made it difficult to draw a clear line between the two. The final gap in research that was an issue was the lack of data with regards to project phases and, more specifically, the culture seen in each of the project phases.

8.2 Research Usage and Benefits

In this section we will briefly explain how researchers, project managers, and manufacturing SMEs could use and benefit from this research.

8.2.1 Researchers

It has been well considered that the results of this entire work might be one day a solid base for other researchers who can benefit from it, since this research may involve or affect multiple individuals or groups in the industry. Although this research ensures in a way or another the needed of independence and excellence, yet it aims at the same time to achieve a positive risk-benefit ratio to help others make good use of it. The study should hold a positive impact for other researchers that triggers them to make use and move forward with it. Moreover, the demonstrable contribution of this research to knowledge, the industry and SMEs should serve as useful work for other researchers who can extend or build on.

8.2.2 Project Managers

Usually companies in the industry in general hold less importance than academia on making scientific and academic contributions, even if the research is scientifically significant. But when industries partner with academia or get involved in pure academic research, they make sure that the time and effort they are putting is something they can benefit from at the end of the day.

As a result of this research and similar ones, project managers are supposed to receive answers, solutions or even creative analysis to problems that are not equipped to answer themselves. Occasionally, they will encounter a specific added value that holds useful commercial value in the market. Project manager who are involved on a daily basis in a dealing with specific patterns and repetitive approaches would make use of this research to get exposed to new academic technical thinking that utilized certain useful trends and experimental techniques.

Today, more than ever, project managers are challenged to stay competitive, creative, more innovative, and faster in their organizations and in the market. They are required to continuously introduce better and less expensive approaches, improve models, and become faster and more flexible in everything they do. This makes their use of this research and other academic ones vital for their work.

8.2.3 Manufacturing SMEs

Researches have been closely identified with a niche subject-matters and companies seem to belong outside this circle. This research is designed, developed and meant to be deeply contributing and benefiting science and industry, especially the manufacturing SMEs. It supports new approaches and ends up with new results, analysis and approaches in these disciplines, which should help transform the way SMEs work in the area of leadership and project management.

Although the acceptance of academic research among some SMEs has been low, not because of its low value, but due to lack of resources needed to utilize or change, still many other SMEs are making use of it. This academic research seems to form a valuable cache of information that pertains to several case studies, experiences and analysis that manufacturing SMEs can depend on for using in their crucial processes, operations and projects. It definitely helps in driving productivity, innovation, and growth and supports building an entrepreneurial internal environment. And this is where the real importance of this research lies. It stimulates positive action, innovation, and progress in an organization that can rely on it.

8.3 Limitation of this Research

Due to the research being in a somewhat newer field of study, that being the study of leadership and project management, it is understandable that there were some limitations to the research conducted. One of the main challenges was the lack of information on certain topics. While the research was aiming to fill in a research gap, some of the background information required to complete the literature review was non-existent. This made it difficult to draw well-informed conclusions and thus presented an issue when putting together the primary research portion of the project.

One of the main research gaps to present itself became apparent early in the literature review. This was the lack of research done on the culture of SMEs, specifically with regards to the culture present in projects relating to IT in manufacturing firms. Given this lack of research, much of the information compiled was drawn from semi-related research. For example, information on culture of SMEs in general and the culture of projects as they have been researched in larger corporations. All of the information was used to create as accurate as possible an image of the cultural nuances present for the research of interest.

The other research gap that presented significant issues for the research was the lack of research on project phases. While some information was present on the general alignment of steps, very little could be found on the intricacies of these steps. In addition, there was next to no research on the cultural differences that present themselves in each phase, or what style of leadership is most beneficial to each phase. As such, information was inferred from what was available.

There were of course limitations to the research undertaken. One of the biggest limitations was that the sample size was small. This allows for a deeper dive into the mindset of project managers and more thorough and in-depth research, but it does make it more difficult to generalize the data compiled to a larger population. Bigger samples could also be used although this would take more time and money to complete given the type of primary research that was conducted. Alternatively, other members of the project team and other stakeholders could be interviewed separately from the project managers as well to provide a more complete picture. Tied into this issue was that the project complexity was not discussed. Projects can have different levels of complexity for scope, time, and processes, with more complex projects requiring different leadership factors. As the research did not touch on the complexity of projects, nor did it discuss how the complexity of projects would impact the leadership factors required, this was a limitation to how the research could be used.

One solution to this particular limitation would be to perform the same surveys and interviews on a new sample or even in a new industry. By comparing the smaller groups of samples, the data gleaned could be more accurately generalized to a larger population. It also made it difficult to use tools and aids that were intended for use with much larger sample sizes of data. There is also the limitation of the analysis tools that were used versus the other available analysis tools. Some tools were not used because of the size limitation of our sample while

others were omitted because it was decided that there were other tools which fit more with the type of analysis that was intended to be done. Other analysis tools could have provided different perspectives and interpretations of the data, such as cause-effect analysis, correlation analysis and grounded theory. If more time and money was available a use of the full range of analysis tools perhaps could have been executed.

Another one of the big limitations of the project was the client perspective. The research centered around project success and this regrettably is not an easy thing to pin down into a single clear definition. This being the case, there was a lot of 'up for interpretation' information being given during the interview and throughout the secondary research about what a client had deemed successful. As there were multiple sources used for secondary information, and multiple project managers interviewed, the exact metrics of each project being deemed successful was difficult to assess. This adds an element of uncertainty into the project which of course is a limitation to interpreting the results. Another way to calculate success of a project is to take a project as a case and perform an in-depth study on it, rather than speak to a project manager who are giving answers based on several projects. Finally, the project discussed the IT sector but there was very little mentioned about agile methodologies which are quite frequently used in the IT sector. This was not discussed as much due to its label as a specific type of projects that project managers can choose rather than an internal leadership factor that must be developed.

8.4 Research Opportunities

This research is valuable as it brings new contributions to the literature on a number of fronts. First, the research developed new understandings of connections that had been previously researched in different ways. For example, the identification and understanding of leadership factors, as well as the importance of integrating leadership with project management. As well, the research undertook new analysis in areas that have been understudied. The role of leadership factors throughout a project and their importance for the project as a whole as well as on individual phases is something that was significantly lacking in the available literature. This one study opened up more questions and provided a template for future research along the same vein of study to be undertaken. The research also provided a new

ranking of leadership factors than what was previously seen. This is an important contribution as the leadership factors were ranked by actively practicing project managers.

Overall, this research targeted many literature gaps in the realm of leadership in project management and project lifecycles, opening up important conversations about project phases and their cultures, and the interconnections between leadership factors, among other things. Some of these were directly addressed in the primary research component while others were beyond the scope of the project. Even for those issues that were beyond the scope of the project, the discussion surrounding the lack of research was brought up, further solidifying their importance as issues that should be covered in future research.

As noted, this research was only a starting point to closing some of the literature gaps. This means that the research performed here has only barely scratched the surface of the things that we still do not have a clear understanding of with regards to project success, leadership, their interconnection, and even the culture of projects, organizations, and project phases. This opens up the opportunity to perform work on these topics in the future.

One research gap that was noticed throughout the project was on the impact and role of leadership in projects performed in SMEs. This is an important research because SMEs make up such a large portion of the world's organizations and yet the research performed to date does not reflect this. Going further into this line of opportunity is the chance to delve into more research on the culture seen in SMEs. Particularly the culture seen in manufacturing SMEs as this was an industry that lacked in research on this topic. Looking at the importance and the differing role of leadership in manufacturing SMEs is another niche of research that has not been amply covered to date.

In addition to the aforementioned research, there is also the research gap that is present with regards to the culture seen in specific project phases. This was a topic that was severely lacking in research coverage. It would be beneficial to study this topic in more depth because cultural differences play a role in what leadership factors will be most useful as well as how a project will be set up and what leadership styles will need to be employed. It is known that projects, especially IT projects, have very low rates of success, and so understanding the intricacies of cultural and atmospheric differences in project phases is just another way to improve the knowledge base and find ways to increase the chances of successful projects.

Finally, it should be noted that the overall combination of research performed in this study is not the final word. In fact, to ensure that the research holds weight, the research itself and research similarly structured should be performed many more times over so that the pool of project managers is larger and therefore the data can be applied to a broader group of individuals and organizations with more certainty. This is true for all research – replications should be welcomed and encouraged, but it is especially important when the topics being researched are in such uncharted territory.

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APPENDIX I – 1ST SURVEY (BEFORE THE INTERVIEW)

1. Question

Below are twenty leadership factors of a project manager that appear to have positive effect on the project success. From your practical experience, how much do you agree?

1	**Integration (Ideas and Teams)**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
2	**Problem Solving**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
3	**Idealized Influence**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
4	**Motivational**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
5	**Visionary Leader**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
6	**Emotional Maturity**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
7	**Individualized Consideration**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
8	**Fast-action Decision Making**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
9	**Customer Service Orientation**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
10	**Change Maker**

A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
11	**Balancing Objectives**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
12	**Business Knowledge and Literacy**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
13	**Flexibility and Adaptability**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
14	**Systematic Information Capturing**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
15	**Intellectually Stimulating Team**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
16	**Communication, Interpersonal skills**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
17	**Innovative**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
18	**Risk Taker**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
19	**Ascertain External Factors**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree
20	**Commitment to the Project**
A	Strongly Agree
B	Agree
C	Neutral
D	Disagree

2. Results

Table 20: 1st Survey Results (Likert Scale Responses)

#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
2	Problem Solving	Neutral	Agree	Neutral	Neutral	Neutral
3	Idealized Influence	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
4	Motivational	Neutral	Strongly Agree	Strongly Agree	Agree	Neutral
5	Visionary Leader	Disagree	Neutral	Neutral	Disagree	Neutral
6	Emotional Maturity	Neutral	Agree	Neutral	Disagree	Disagree
7	Individualized Consideration	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Agree
8	Fast-action Decision Making	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
9	Customer Service Orientation	Agree	Disagree	Neutral	Neutral	Neutral
10	Change Maker	Neutral	Neutral	Neutral	Neutral	Neutral
11	Balancing Objectives	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
12	Business Knowledge and Literacy	Neutral	Neutral	Agree	Agree	Disagree
13	Flexibility and Adaptability	Neutral	Neutral	Neutral	Disagree	Neutral
14	Systematic Information Capturing	Agree	Agree	Agree	Strongly Agree	Strongly Agree
15	Intellectually Stimulating Team	Agree	Strongly Agree	Strongly Agree	Strongly Agree	Agree
16	Communication, Interpersonal skills	Agree	Neutral	Neutral	Neutral	Neutral
17	Innovative	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
18	Risk Taker	Neutral	Disagree	Neutral	Neutral	Disagree
19	Ascertain External Factors	Neutral	Neutral	Neutral	Neutral	Neutral
20	Commitment to the Project	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree

Table 21: 1st Survey Results (Likert Scale Values)

#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	4	3	4	4	4	19
2	Problem Solving	2	3	2	2	2	11
3	Idealized Influence	4	4	4	4	4	20
4	Motivational	2	4	4	3	2	15
5	Visionary Leader	1	2	2	1	2	8
6	Emotional Maturity	2	3	2	1	1	9
7	Individualized Consideration	4	3	4	4	3	18
8	Fast-action Decision Making	4	4	4	4	4	20
9	Customer Service Orientation	3	1	2	2	2	10
10	Change Maker	2	2	2	2	2	10
11	Balancing Objectives	4	4	4	4	4	20
12	Business Knowledge and Literacy	2	2	3	3	1	11
13	Flexibility and Adaptability	2	2	2	1	2	9
14	Systematic Information Capturing	3	3	3	4	4	17
15	Intellectually Stimulating Team	3	4	4	4	3	18
16	Communication, Interpersonal skills	3	2	2	2	2	11
17	Innovative	3	3	4	4	4	18
18	Risk Taker	2	1	2	2	1	8
19	Ascertain External Factors	2	2	2	2	2	10
20	Commitment to the Project	4	4	4	4	4	20

3. Graphs

Figure 32: Company Comparison of Leadership Factor Importance

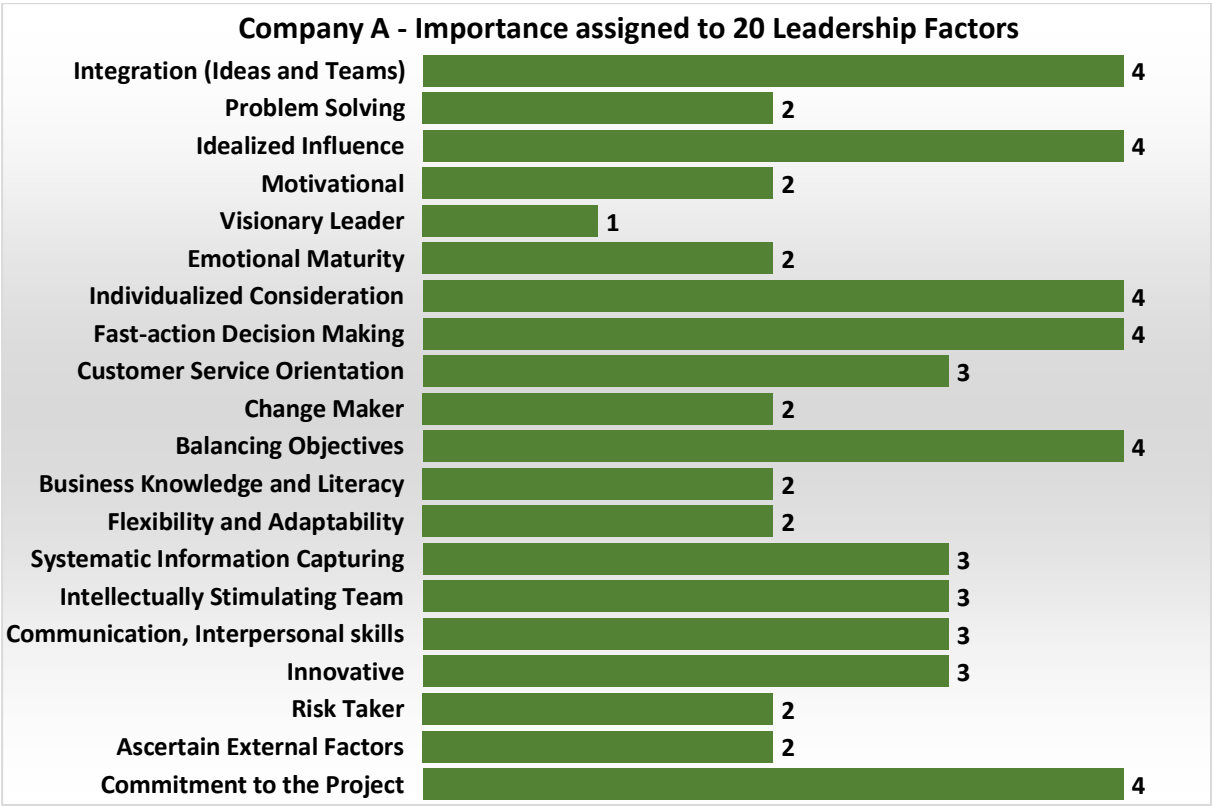

Figure 33: Company A – Importance assigned to 20 Leadership Factors

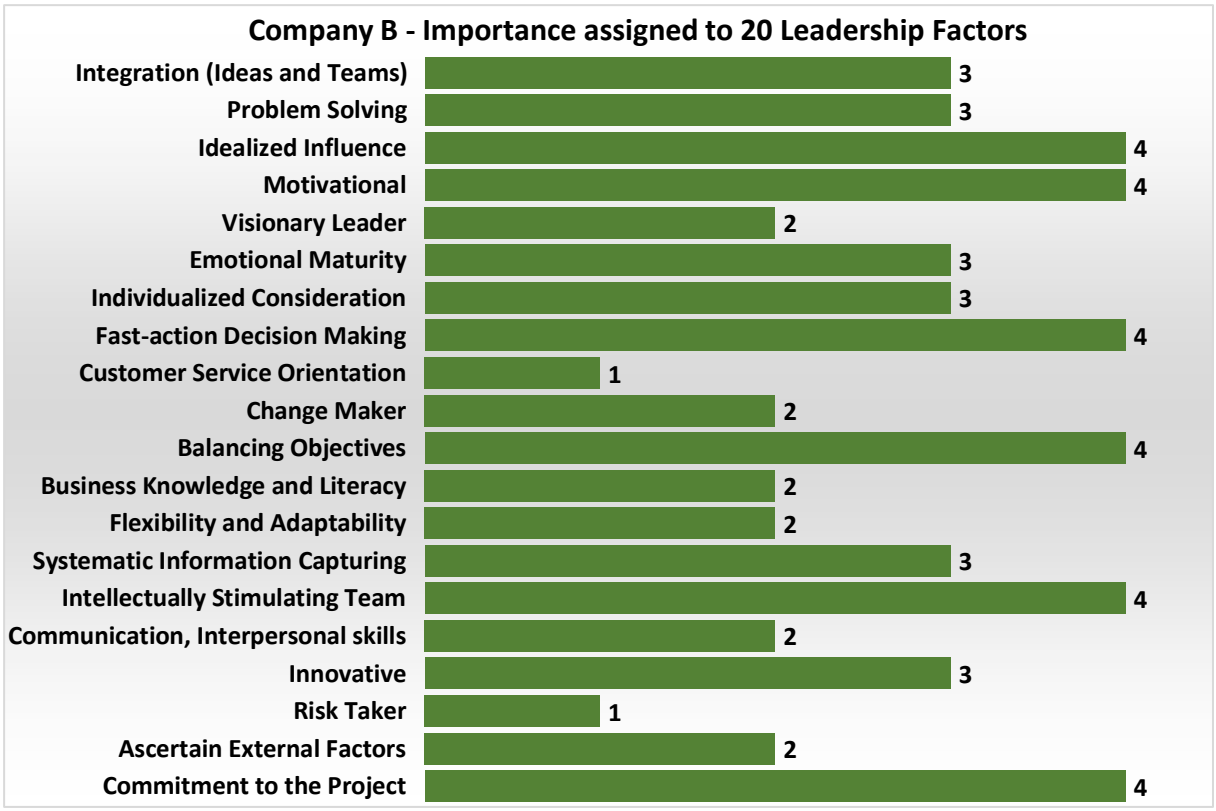

Figure 34: Company B – Importance assigned to 20 Leadership Factors

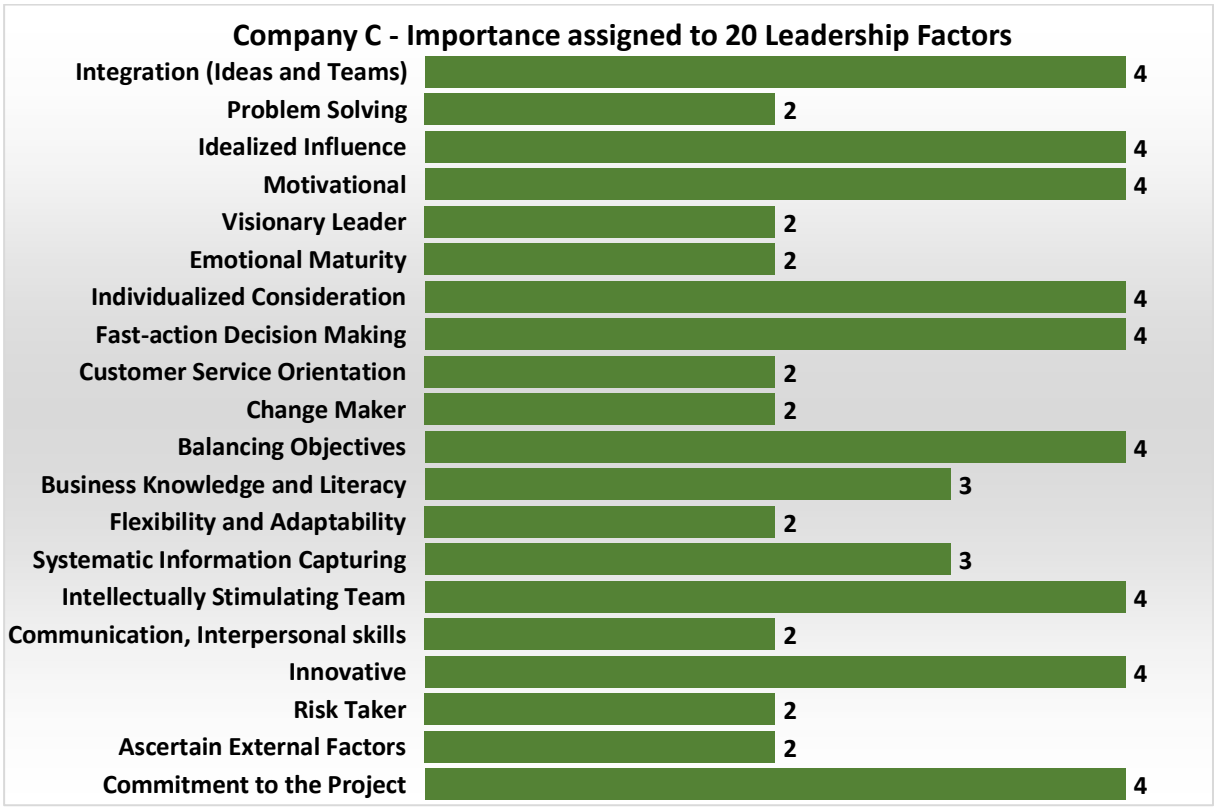

Figure 35: Company C – Importance assigned to 20 Leadership Factors

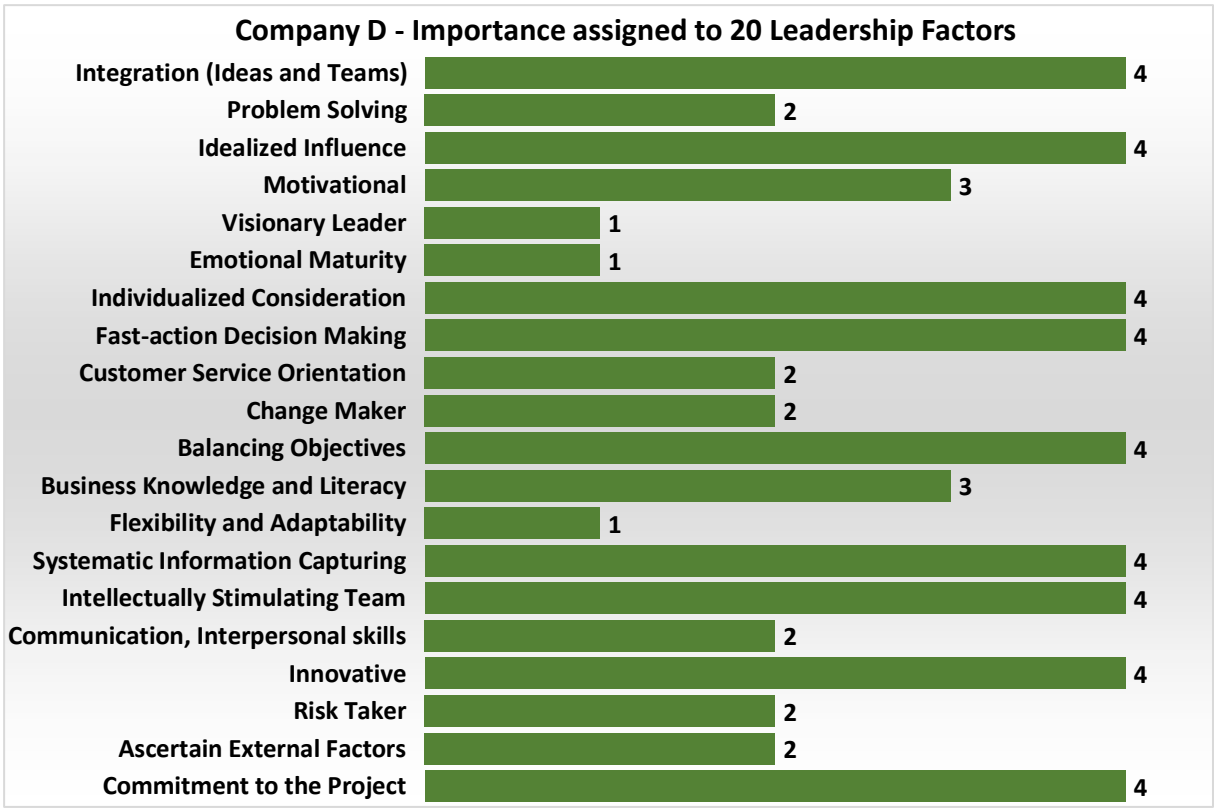

Figure 36: Company D – Importance assigned to 20 Leadership Factors

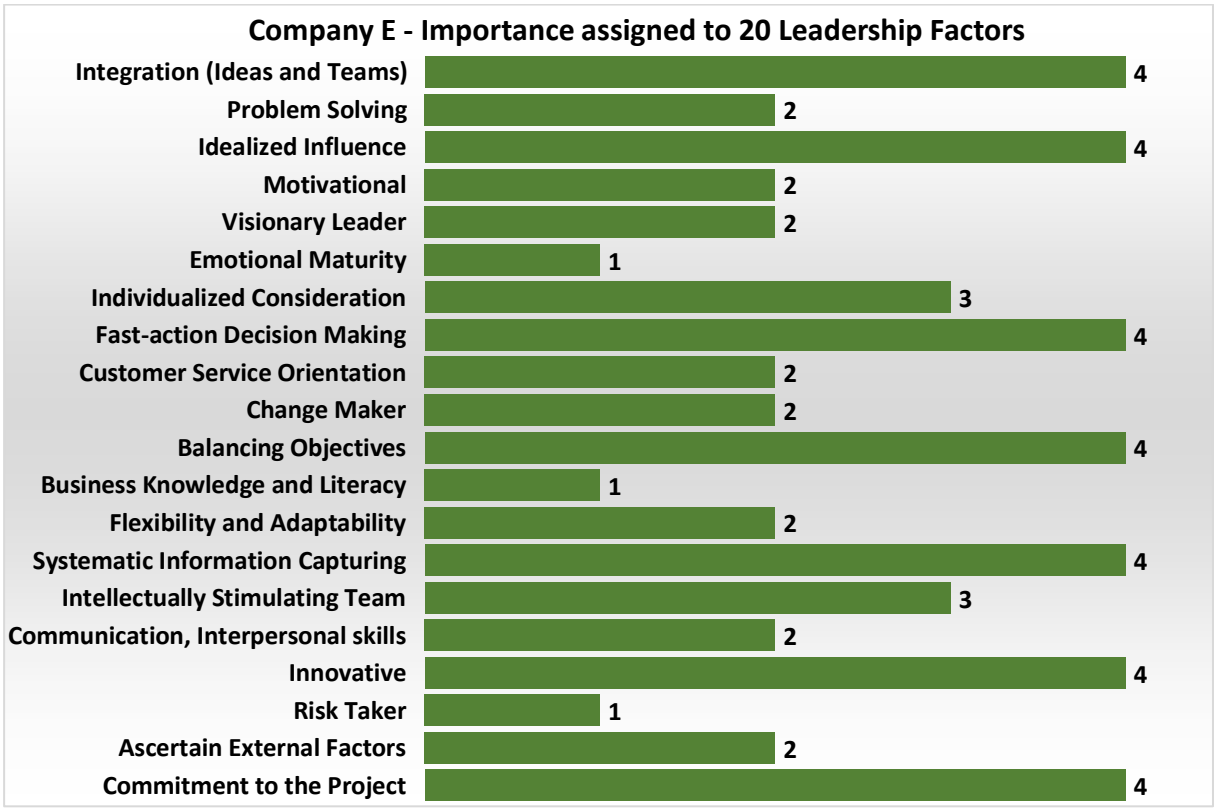

Figure 37: Company E – Importance assigned to 20 Leadership Factors

APPENDIX II – INTERVIEW TRANSCRIPTS

1. Company A

1st Question	How would you define Project Success?
Project Manager	For us, a project is successful when we have fulfilled the goals that we set out to accomplish from the project. Often this means that the target group in the organization is actually able to use the project's outputs as they were intended to be used. For example, if the outputs are cumbersome or awkward so they just sort of stop being used, this would be a failure since the project didn't result in an output that benefitted the end user. When we work with clients, this becomes even more important, because if the client isn't happy with the outputs, or if the outputs don't work the way they were supposed to, that client will often choose to take their business elsewhere for future projects. Of course, we also take into account the budget and the timeline of the project. So, if a project runs way over budget or way over the time limit we had set for it, it impacts the perception of the project being a complete success.

2nd Question	How would you define a good project manager?
Project Manager	A good project manager is somebody who is able to anticipate the needs of their team and respond accordingly. They are someone who can accurately assess project team variables and, from that, adjust their leadership style accordingly. On that note, a good project manager should be a good leader just in general; helping guide the team, foster innovation and initiative among team members, and helping to keep the team focused on the big picture as they work on small steps of the project. Essentially, a project manager has a multitude of roles that are required of them, so they need to be versatile and knowledgeable in a variety of areas. They should also be very good at knowledge sharing. This is important because it allows the knowledge gained from a project, or even one part of a project, to be learned across an organization. In our knowledge-based economy, having an organization that is knowledgeable across the board is incredibly important and a lot of new knowledge is gained from the work done in projects.

3rd Question	How would you define Leadership with regards to project management?
Project Manager	When speaking about leadership as it refers to project management, there are many different ways that this can present itself. Effective leadership in a project will differ depending on the culture of the organization it is operating within, as well as the type of project and the specific individuals involved in the

	project. This being said, there are some factors that can generally be assumed to be effective for leadership across all projects. First, projects tend to be about creating change, which means that project managers need to be able to innovate and they need to be able to create a culture of innovation within the project team. Creativity and individuality are very often important in projects and so the person in a position of leadership should be able to imagine an atmosphere where these things are encouraged. As well, projects are often much more fluid in structure and approach, changing as the circumstances change, sometimes with very little warning. Because of this, a leader needs to be flexible when they are involved in project management and adaptable to the changing needs of the project and the project team. Finally, leadership should be about ensuring that the team's and the client's needs are accounted for. This might mean increasing communication, finding ways to motivate the team, or helping the team to realise their own skills so that the project can be achieved in a successful manner.

4th Question	**Based on a literature review and input from Subject Matter Experts like yourself, ten leadership factors appear to have the most positive effect on project success.** **1. Integration (Ideas and Teams)** **2. Balancing Objectives** **3. Systematic Information Capturing** **4. Commitment to the Project** **5. Motivational** **6. Innovative** **7. Idealized Influence** **8. Fast-action Decision Making** **9. Intellectually Stimulating Team** **10. Individualized Consideration** **Could these leadership factors interconnect in a way that would produce a higher project success rate compared to if they were employed on their own?**
Project Manager	Absolutely. Just briefly reading through the list (mentioned in the question) I can already think of a number of interconnections that would serve to improve the chances of success then if they were employed on their own. The first factor I noted to have some interconnections with other factors was Integration (Ideas and Teams). First, it is quite apparent that it has an interconnection to the Motivational factor. Motivating team members, specifically to work together and to share knowledge, is an important piece of Integration. While it may be possible to integrate teams without any motivational help, motivating them to integrate their ideas and themselves to be a cohesive team, either through incentives or by getting them excited about the project and results, will make the integration process a lot smoother. Another interconnected factor with Integration I noted would be Intellectually Stimulating Team. Intertwining these two factors to use together would be

	beneficial because if you are stimulating the team to think critically, then the ideas they come up with will be more innovative and creative. Hopefully, this will also allow for creative ways for team members ideas to be integrated, especially if there are semi conflicting ideas that would both be useful for the project. The final factor I immediately noticed would be beneficial if combined with Integration was Idealized Influence. Idealized Influence would be beneficial used in combination with Integration because the project manager acts as a role model for how to interact and problem solve conflicts with team members. Modelling how to interact with other team members, as well as how to problem solve idea integration using creative solutions will be helpful as it gives the project team an idea of how they themselves should be acting. This of course, takes some of the pressure off of the project manager since teams will be working together to integrate, and not relying on the project manager to fix any conflicts that arise. I also noticed some connections between the Innovation leadership factor and a few of the other factors. The first very strong connection I can speak to is the connection innovation has with motivation. Motivation can help foster innovation as it is about channelling energy, passion, and drive into the tasks assigned for the project. If individuals are motivated to put in more effort, they will be more able, and willing, to put effort into thinking up innovative solutions. Another beneficial interconnection is Commitment to the Project. This is quite straight-forward. If the project manager is not committed to the project, they will not be willing to put in much effort into thinking in innovative ways and developing solutions. In this sense, being committed to the project is a pre-requisite for a project manager to have innovative capacity. The last interconnection I noted for innovation was the ability to intellectually stimulate the team. By Intellectually Stimulating Team, the project manager is helping to foster a culture of innovation, challenging the team members to think in new ways and develop some of the critical and creative thinking needed to innovate. Lastly, I noticed some beneficial interconnections with the Systematic Information Capturing factor. The first was a connection to Commitment to the Project. Systematic Information capturing is an important but tedious step in the project management process. Because of this, if a project manager is not committed to the project, it tends to either not get done well or not get done at all. I also noticed a beneficial connection to innovation. Systematic Information Capturing can lead to discoveries about where projects went wrong and gaps that occurred that hindered the project. Being able to take that information and use it to find solutions and develop better strategies is where innovation comes into play. Without the ability to see other options and use innovative capabilities to solve some of the issues seen, future projects may suffer similar fates and downfalls.

5th Question	**In your opinion, what effect do these leadership factors have on project success?**
Project Manager	Leadership overall has a big impact on the outcome of a project and so it makes sense that the different factors that make up leadership would have

	their own specific value in helping to make a project successful. For the first leadership factor, Integration, this is very key for project success, both with regards to Integration of the team and of the ideas and information throughout the project's lifecycle. Having a well-integrated team is beneficial to a project because it ensures that the team functions properly together. If we think about each team member as a crucial component to a machine (the project), these pieces need to work together properly otherwise the machine won't work - leading to project failure or at very least a project that moves forward too slowly and over-extends their budget for time and resources. Integration of ideas is a similar concept, but in this case, ideas or information that are not properly integrated can lead to important things being missed or forgotten. This can impact project success in a variety of ways depending on the phase of the project in question. In the initiation or planning phases, missing information can lead to detrimental circumstances because of a lack of preparation, and in the monitoring and controlling phase a lack of Integration, can be detrimental to the project's success in that it means that issues might not be caught and fixed before the output gets sent for use. The second factor, Balancing Objectives, can impact success because it has a lot to do with time and resource management. An inability to effectively balance all of the competing objectives can, at very least, lead to a project to be challenged, and in the worst cases, this inability to balance objectives can lead to issues that make the project more confusing, disjointed, and ultimately unsuccessful. Systematic Information Capturing, the third objective has an impact on project success because it is a check and balance system that can help to make sure that if an issue occurs, it can be traced back to the initial mistake and fixed. It also has an impact on the success of future projects because it can be used as a guide of what worked and what didn't work. The fourth leadership factor mentioned, Commitment to the Project has a very simple impact on the success of a project, that being that if the project manager and the team are not committed to the project and place no importance on its success, the chances that it will be successful fall drastically. Many of the extra steps and care taken, when there is an element of commitment, will disappear. The fifth factor, Motivational, also has a fairly simple impact on the success of a project. Without motivation, people will not take the extra time or care to go above and beyond to make sure that the project is successful. If project managers take this seriously, and work to find ways to motivate those employees that are not putting in effort, there will be positive results. For innovation, this leadership factor has a strong effect on the success of a project because projects are born out of a culture of innovation. Without this innovation culture, projects run the risk of not identifying the best solution, or any solution that functions well for the end users, thus making the project unsuccessful. The seventh leadership factor is also fairly straightforward in its impact on project success: the project manager leads by example and creates the desired atmosphere and ambition for the project through this example. If the project manager has a positive outlook on the project, a good drive, and shows this to the workers, they are more inclined to follow suite. The next leadership factor, Fast-action Decision Making, is important throughout the

	project but particularly during the execution phase, when there are a number of things to be done at once and they all have deadlines. The ability to think on ones' feet and make educated decisions quickly with limited information helps to move this process along at a pace that will ensure that the project gets finished successfully. The ninth factor, or Intellectually Stimulating Team has a similar impact to that of motivation and innovation, as it is about helping the team to think critically and stay engaged in the project. As mentioned before, these are important things to foster in the project team because it allows for an increase in creative ideas and more committed employees to seeing the project through. Finally, the last leadership factor, that of Individualized Consideration, is important as it empowers team members, makes them feel important, and focuses on their strengths so that they work where they will do the best work. By empowering workers and figuring out where they will work best, the project manager improves the chances of success.

6th Question	**Can you describe the culture of each project phase and how it influences the decision on what leadership factors to employ?**
Project Manager	While there is most certainly a difference in culture between the five phases of a project, the difference in project phase culture can be impacted as well by factors such as who is involved in the project, the culture of the organization in general, and how the project is set up. Regardless, there are some general trends in project phase culture that I can speak to. For the initiation phase, the culture tends to be much more collaborative and contained because there are so few people involved. There is not a whole lot of hierarchy as it is generally similar to a brainstorming session, where everyone chosen to be involved has a valid stake in the outcome of the project. Leadership culture in this phase is typically much more of a guiding role, very inclusive, with the general environment being highly democratic. For the planning phase, there are also fewer people involved, typically even less than in the initiating phase, because this is when logistical decisions need to be made. However, now the project manager has to take a more direct hierarchal role because of the insight they should have with regards to planning projects effectively. Despite this, there is still often an element of collaborative culture present in the planning phase. It is important to note that there is some uncertainty with this phase, and the project manager as well as those few involved in the planning process, have this element contributing to the overall feel of this phase. Moving forward to the execution phase, there are a lot more people involved which alters the culture seen in the first two phases. This is where the culture will shift a lot from project to project, depending on who is involved and what the general culture of the organization tends towards. In general, however, there will be a slightly more hierarchal structure seen, and a culture of innovation to enact the project. Then there is the monitoring and controlling phase. This phase overlaps somewhat with the execution phase as some of the tasks that fall under the 'monitoring and controlling' umbrella will occur during the execution phase. The culture seen once this phase has fully started, and even in the tasks relating to it that occur during the execution phase have a slightly different

	cultural backdrop to those in the earlier phases. There is a culture that promotes constant checks and balances, feedback loops, and meticulous recording of important information. Finally, in the closing phase, the culture is one of readjustment. Loose ends are tied up, reports are written, the product is launched, and the individuals brought on are re-organized back to their original departments or to new projects.

2. Company B

1st Question	How would you define Project Success?
Project Manager	Project success has to do with ensuring that the project is delivered within the set aside budget, timeframe, and is delivered with quality results. The quality piece is the most important of course. Quality referring to a number of different aspects of the project. For example, meaning that the quality of the work is high, the output achieves what it is meant to, and having a good relationship with the client or end user is maintained throughout the project, and even after the project has been delivered, in case there is anything that needs to be sorted out. It is extremely important that the quality of the project is upheld and that the final output works well for the end user for a project to be considered a success. Cost and timeline should be adhered to as well, but if the project goes a bit over budget or takes a little longer but is useful to the client, then it should still be considered a successful project nonetheless.

2nd Question	How would you define a good project manager?
Project Manager	In my opinion, a good project manager is someone who is versatile, knowledgeable about their industry, their organization, and about how to innovate. Being able to innovate is incredibly important for project-specific management especially, since projects are all about creating new things and finding solutions. Project managers have a number of roles that they need to be able to balance, but one of particular importance is the leadership role that they are expected to play for their team members. To truly be a good project manager, being a good leader is imperative. Leadership, especially transformational leadership where the project leader is empowering team members, is also incredibly useful for fostering innovation in projects. While a project manager can certainly do their job without being a particularly good leader, I believe that it hinders their ability to be good at their job which in turn can have serious consequences for the outcome of projects and their success.

3rd Question	How would you define Leadership with regards to project management?
Project Manager	In my experience, projects tend to change quickly and often without warning. Because of this, leadership, when in reference to project management, needs to be adaptable and versatile. In addition to this, every project, project team, and organization will be different, and so the leadership strategies that a project manager employs need to match the circumstances. In this sense as well, leadership needs to have versatility and adaptability. Given that projects are also very much about being innovative, leadership needs to be able to create an atmosphere where innovation, initiative, and creativity are not only allowed, but encouraged. Team members should be encouraged to develop their own ability to lead and take chances, to be independent thinkers and risk takers. As well, leadership in a project management setting should be about motivating all team members to achieve the project goals.

4th Question	**Based on a literature review and input from Subject Matter Experts like yourself, ten leadership factors appear to have the most positive effect on project success.** **1. Integration (Ideas and Teams)** **2. Balancing Objectives** **3. Systematic Information Capturing** **4. Commitment to the Project** **5. Motivational** **6. Innovative** **7. Idealized Influence** **8. Fast-action Decision Making** **9. Intellectually Stimulating Team** **10. Individualized Consideration** **Could these leadership factors interconnect in a way that would produce a higher project success rate compared to if they were employed on their own?**
Project Manager	There are definitely some ways in which these leadership factors could be combined to produce a higher success rate than if they were used individually. One set that jumps out at me in particular are some interconnections with the Fast-action oriented leadership factor. The first beneficial connection would be with Balancing Objectives. Balancing Objectives is an ongoing process throughout a project's lifecycle, and this includes during the execution phase when there are a lot of deadlines to be met and lots of tasks all up in the air at once. A project manager may sometimes need to make a decision about which tasks to pursue first, or which ones take priority, in a quick fashion with very little time to digest variables and come up with a solution. This is when having those fast-action decisions making skills can really come in handy when Balancing Objectives. As well, Intellectually Stimulating Team can have a beneficial impact on the balancing of objectives. If the team members are

	exercising their brains and their ability to think critically, it is understandable that they would be able to make some of those decisions about which objectives they need to give priority without having to consult the project manager for every little thing. This spreads the responsibility and gives the project manager more time to focus on those objective decisions that are more complex. More indirectly, Commitment to the Project will be a beneficial interconnection. This is simply because if the project manager is not committed to the project they have less of a stake in the outcome and will put less effort into doing the jobs, such as dealing with time constraints and multiple objectives, than they would if they were committed to the project.

5th Question	In your opinion, what effect do these leadership factors have on project success?
Project Manager	Leadership factors can come in handy throughout the project, especially when issues arise that the project leader has to fix, or risk impacting the project's success. One such issue that I have personally experienced occurred primarily during the execution phase of a project. Earlier on in the project, it was identified by the project leader and the other stakeholders involved in the project planning, that there was a lack of internal knowledge on how to perform a market analysis. People from all departments of the organization were considered and no one had enough knowledge about the subject to ensure that we would get an accurate analysis performed. Of course, this is an important step, and we did not want to risk developing outputs around incorrect assumptions about the market. We decided to bring is outside help from an organization that specialised in market analyzes. Once we started the execution phase of the project however, the internal team and the external vendors started to have some problems integrating themselves and working together cohesively. This was something that had not been fully anticipated, but in hindsight, it made sense given that the two teams had very different knowledge bases, approaches to developing project outputs, and different understandings of what we were looking to achieve. It did not help that the external vendor's grasp of our industry was not very strong. This was causing even more issues; it was starting to impact the scope of the project, extending our timelines and in some cases, it was starting to increase our budget. Employing some of these leadership factors was beneficial as they helped to solve these issues, thereby benefitting the success of the project. First, we looked to Integration to help the project team and the external team work better together, and broach some of those knowledge gaps. One representative from each team was chosen to work as a liaison with the other team, so an internal team member was embedded on the external team and external team member embedded on the internal project team. In doing so, these two individuals acted as a subject matter expert for the opposite team, ensuring that there was someone there at all times to clear up and issues and fix pieces that had been developed under a misunderstood concept. Also employed was Individualized Consideration. This was useful because it seemed that some of the project team and external team members were going forward

	with tasks even if they had a limited understanding of what was going on. People on both teams were going ahead with things because they felt they had enough of an understanding to do it properly, instead of asking for clarification or passing the task onto to someone who was more knowledgeable. This was slowing down the project and causing delays as tasks had to be redone. Individualized Consideration helped me to identify the strengths of each individual and reframe the project for people so that they focused just on what they could most offer to the project. Last, the leadership factor of Balancing Objectives was used to make sure that the tasks were being organized in a way that everyone had something to do and deadlines were being met. Since there were two different teams, Balancing Objectives became even more important, and doing in a way where people had something to do at all times in their given area of strength was helpful in that it added another layer of insurance that people would not attempt to perform tasks that they didn't have enough knowledge to complete accurately. This kept everything within the desired scope and helped the team to work more cohesively together, which benefitted project success immensely and served to act as a great experience for the external vendors who were more than happy to work with us on future projects, should we need their assistance again.

6th Question	**Can you describe the culture of each project phase and how it influences the decision on what leadership factors to employ?**
Project Manager	There are some subtle cultural differences between the project phases. For the initiation phase, generally the culture is a lot more inclusive and collaborative because there is not much of a hierarchy between the individuals involved in this phase. It is a lot of researching, brainstorming, and working together with individuals with different viewpoints of the organization to come up with the best idea for a solution and then trying to fill out some of the details. Once we move into the planning phase, while still decently democratic as a phase, the project manager takes a bit more of a lead, so the culture tends to get a bit more structured. There are also very few people involved in this phase, so it is possible for collaboration. Collaboration is also welcomed because there is a lot of guesswork involved in the planning of projects, so any useful insights are incredibly beneficial to creating as accurate a plan as possible. The next phase is, of course, the execution phase. This phase involved a much larger number of people, often from departments all across the organization and sometimes even including experts from outside of the organization. As such, the importance of having someone who is clearly in the management position is important, so the culture in this phase is often more hierarchal than what is seen up until the execution phase. The culture in this phase, now that it is bringing in so many people from across the organization, can vary significantly from organization to organization and even project to project. Generally speaking though, this phase has at least somewhat of a culture of innovation. There is often also an atmosphere that supports a bit of flexibility, since not everything was accounted for in the plan. At times an element of urgency can be seen as there are deadlines and resource constraints on the project. Once

	we get to the monitoring and controlling phase, this culture of urgency is still somewhat apparent. I should point out that some of the monitoring and controlling does occur during the rest of the project, but there is also a point in time when the project output has been developed and now activities are solely devoted to monitoring and controlling. In this phase, given the amount of people who have collected information, the culture tends to become more open with a lot of dialogue and interconnected pieces. Finally, the culture seen in the closing phase is very similar to what one might see in an organization that was restructuring in some way. A lot of change, endings, and readjustments back to old positions.

3. Company C

1st Question	How would you define Project Success?
Project Manager	I consider a project to be successful if it achieves the objectives it was intended to achieve. Project objectives and purpose are decided at the beginning of the project conception, often to solve an issue or a gap of some sort. If a project is completed and it solves the issues, or closes the gap that it was supposed to, then the project can be deemed a success. It is a bonus if the project is finished on time and within the set budget, and as long as it doesn't go too far outside of the limits of the set scope then I would still consider the project to be a success. Basically, the project's output has to be useable. It's as simple as that. Projects that don't take into account the end users, aren't going to target the specific necessities, or any of the organizational, logistical, or cultural aspects that the project should be structured to function within and therefore more likely to fail. In this sense, the clients and end users play a big role when it comes to determining whether or not a project has been successful. Even if we have hit all the marks, checked all the boxes for our objectives, if the end user isn't satisfied - if their objectives haven't been satisfied - then the project can't be considered successful.

2nd Question	How would you define a good project manager?
Project Manager	A good project manager is someone who can balance all of the competing demands that their role asks of them and do it well. This means they are able to take into account all of the needs of the team and the individual team members, they are able to foster innovation and creativity in their team, they are able to keep everyone on track with the big picture of the project in mind, and the list goes on. One of the most important criteria for being a good project manager is that you need to be a good leader. This is important for actually achieving some of the other roles that are demanded of a project manager. It is important for creating an atmosphere that is conducive to

	innovation and for keeping team members motivated and on task to name a couple. Another factor that defines a good project manager is their ability to engage in knowledge sharing across the team and across the organization. Projects are useful for gaining so much insight and a project manager who cannot compile this information and disperse it throughout the organization risks negatively impacting the project, and future projects.

3rd Question	**How would you define Leadership with regards to project management?**
Project Manager	Leadership, even with respect to project management specifically, can present itself in a lot of different ways. This is because the culture of the organization, the individuals involved in the project, and the type of project being performed, all impact the type of leadership style that will be employed. This being said, generally speaking, projects have a more innovative cultural aspect and they also tend to change a lot throughout their life cycle. This means that there are some ways to define leadership in project management, even in a more general sense. From my experience, leadership in context means being able to motivate and guide the project team to follow the project through to a successful conclusion. How this manifests itself will depend on all of the things I listed above, but as a general rule this includes the ability to foster innovation in the project team. It also means keeping the bigger picture in view for the project team and developing ways to illustrate to the team members the valuable role they are playing in the success of the project.

4th Question	**Based on a literature review and input from Subject Matter Experts like yourself, ten leadership factors appear to have the most positive effect on project success.** **1. Integration (Ideas and Teams)** **2. Balancing Objectives** **3. Systematic Information Capturing** **4. Commitment to the Project** **5. Motivational** **6. Innovative** **7. Idealized Influence** **8. Fast-action Decision Making** **9. Intellectually Stimulating Team** **10. Individualized Consideration** **Could these leadership factors interconnect in a way that would produce a higher project success rate compared to if they were employed on their own?**
Project Manager	Yes, I believe that there are indeed ways that interconnections between factors would be beneficial to the success rate of project. There were a number of such interconnections that I would be happy to talk about. The first

	factor I noticed some beneficial connections to was Commitment to the Project. Being committed to the project will generally boost the level of engagement with leadership activities and makes project managers do a better job simply because they care about the outcome. A few connections in particular that I would like to point out are the connections that Commitment to the Project has with Systematic Information Capturing, Individualized Consideration, Idealized Influence, and innovation. First, Systematic Information Capturing is a very time-consuming part of project completion. If the project manager is not committed to the project, then this step can get neglected leaving the project in question and future projects vulnerable. Secondly, Individualized Consideration can be benefitted by a project manager being committed to a project because this is time consuming and intensive leadership factor that will not be adopted by a project manager who has no real stake in the project. Thirdly, the project manager will not be a good role model for how the team members should be approaching the project tasks if they themselves have no real interest in seeing the project succeed. If they are not providing any form of Idealized Influence to the team, then the project team will not feel the need to put in any extra effort and will often start to lose interest to the project as well. Finally, there is a beneficial connection to innovation. Innovation is a process, and it involves critical and creative thinking. With a lack of commitment to a project, innovation would just be an added burden and the innovation culture present would die down, with fewer solutions being developed. Another factor with beneficial connections is Idealized Influence. The two interconnections not already touched upon are to innovation and Intellectually Stimulating Team. Innovation in combination with Idealized Influence can be beneficial because if the project manager is leading by example and is using their own innovative capacity, it can foster innovation across the project team and lead to more and better ideas being brought forth. In terms of the beneficial connection to Intellectually Stimulating Team, the project manager leading by example and using critical thinking to problem solve or presenting the team with problems and helping them to work through them allows the team members to develop those skills rather than simply present the issues to someone else to solve for them. There were also a few connections worth noting with regards to Individualized Consideration. The first beneficial interconnection is with motivation. Individualized Consideration is one tool a project manager can use to engage and motivate their team members, so it serves as a highly useful leadership factor to employ, if the team members are not engaging in the project in some respect. To a lesser extent, Individualized Consideration can be interconnected with Idealized Influence by using the ability to be a positive role model to help team members realise their own strengths and focus on using those to forward the project. Finally, there a couple beneficial interconnections to Balancing Objectives of note. The first was with Fast-action Decision Making. The ability to make fast critical decisions is important when it comes to balancing all of the objectives, especially when timelines are in play - which they are when dealing with projects. There is also a beneficial connection seen with Integration. Integration of ideas can help with decreasing the number of

	competing objectives and integrating the team so that they function more cohesively can help to make sure that issues do not arise as often that need the project manager's attention.

5th Question	In your opinion, what effect do these leadership factors have on project success?
Project Manager	Throughout a project's lifecycle, there are ways in which these leadership factors can be used to improve the chances of project success in every single project phase. The example that I would like to give for use of some of these leadership factors is in the planning phase for a project. When planning a project, generally our organization includes a key member from each department so that the in-depth knowledge they have of that particular part of the organization can be used to make the project as effective as possible. Tons of different issues will arise throughout the project and these individuals can help a project manager to prepare for any scenario that may arise. They also have a lot of knowledge about how a certain aspect of the business functions so when planning the project, they can help to develop the outputs in a way that will be the most impactful and beneficial to the project. This is all great, but sometimes, these individuals are not very good at working together when it comes to developing ideas. A lot of the time, they are used to working with other people in their department who have a similar outlook on the organization and similar approaches to solving problems. These differing ideals, perspectives, expectations, and particular requirements that they have for the project can make it difficult to actually get an effective plan nailed down in a timely manner. As discussions started on the planning process for this particular project, it was apparent that this was definitely going to be an issue, since points of contention and conflicts were already appearing between the key department representatives. As project manager for this project, I needed to employ some of the aforementioned leadership factors to make sure that the problems did not continue, since this could very much threaten the chance of the project succeeding. The first leadership factor put to use was the Integration, primarily of ideas. It had started to feel as though department leads were losing sight of the reason why they had been brought on, which meant that important ideas were being lost while instead a competition started between who could get more ideas that benefitted their department onto the project plan. Innovation was also implemented, combined with Balancing Objectives to further the chances of project success. How these were used is fairly straightforward. First, because so many ideas were being thrown around, many without fully thinking about the end goal of the project and how it would benefit the organization as a whole, the project and the reason why each department was involved was reframed. The idea behind this was to get the department leads to take a step back and realise that they were all working towards the same goal, and that they were all part of the same organization - a fact that they appeared to have forgotten judging by how they were acting. It was important that key ideas were included while other less key, but beneficial ideas, were treated as extras that, if accomplished, would

	be great but not necessary. Project discussions were halted so that this reframing discussion could happen with each member. Once this was done, a further step was taken to really make sure that everything worked out well. Innovation was employed to develop a solution - in this situation an experiment of sorts was developed. Each key department member was asked to make a list of all of the ideas that they wanted included in the project, and of what things would be important to make the project output function properly. Then they were asked to divide this list into what was truly important and what were just 'wish list' items that merely added extra benefit. Once these were all developed, the team was brought back together and discussions ensued based on these lists. It was now important to take all of these requests and crucial-to-success pieces and bring them together in a plan. Balancing Objectives came into play as there were a surplus of extra ideas and only some would make it into the project. As well, the order and function of each of the critical project pieces needed to put into the plan in a way that would ensure that they would be executed in an efficient manner.

6th Question	**Can you describe the culture of each project phase and how it influences the decision on what leadership factors to employ?**
Project Manager	Culture comes a lot from the organization itself but there are definitely some general differences between the phases that I can speak to. In the initiation phase, it is a small group of people and the atmosphere is very collaborative. Input is important in this phase and since everyone is usually on roughly, the same level of seniority in the organization and stake in the outcome of the project, there is a highly democratic feel to the environment. In terms of leadership culture, the role is very much about guiding the conversations and providing knowledgeable insight into project environment to help ensure that the ideas that come forward are manageable. In the next phase, or the planning phase, the group involved is generally smaller and this is where the project manager takes a bit more of a leadership role, so a slight hierarchy culture is felt. Collaboration is still incredibly important in this phase, and due to the small number of individuals involved, still highly possible to have that kind of environment. Moving on to the execution phase, there are generally speaking a lot more people involved in the process. This means that there is a much clearer hierarchy present in this phase. The culture is also one of innovation and also urgency to a certain degree, as the outputs are being developed and timelines need to be met. Throughout the execution phase, and throughout the project more generally, aspects of the next phase to be discussed are also occurring. This next phase is the monitoring and controlling phase, where information is collected and documented so that it can aid the current project before it officially makes its way into the world, as well as helping future project to avoid pitfalls and follow things that achieved beneficial results. In this phase, there is a culture of collaboration in a slightly different sense then earlier on in the project's lifecycle. Due to the nature of the phase, there needs to be open dialogue and conversations between all of the different people involved in the project so that no information is missed.

	Finally, in the closing phase, the cultural environment is one of flux, with final documents being completed, closing duties attended to, and a reorganization of the workforce that was temporarily involved with the project.

4. Company D

1st Question	How would you define Project Success?
Project Manager	Simply put, a project is successful if it is put to use once it is finished. Project success should take into account metrics of cost, time, and quality, but it is the quality piece that needs to be emphasized. If the quality of the project is not up to a standard where it can be used as it was intended, and where it doesn't work well for the clients, then the project hasn't been a success. This is not just about the outputs either. Ensuring quality in the project applies to every aspect of the project, from maintaining a solid relationship with the client, to ensuring that the project meets the identified objectives and solves the problem the client was needing solved. That's really what project success is about: keeping the end user and/or the client happy. What we want, that being to keep the project under budget and on time, is still important and can absolutely affect the project's success, but without that quality metric in place there, a project cannot truly be considered a success.

2nd Question	How would you define a good project manager?
Project Manager	Project managers have so many different roles to play, they need to be good at gauging when to engage in what roles. Along a similar note, they also have a lot of competing demands and therefore need to be able to balance these effectively. This includes the demands placed on them by project team members with regards to support, guidance, and knowledge sharing. One key role that project managers have that actually supports their ability to attend to many of the demands they face, is being a leader. For a project manager to be good at what they do, they need to have a strong grasp on how to be a good leader. This extends to everything from anticipating and supporting team members needs, to fostering a culture of innovation. Keeping employees informed, motivated, and concentrating on the end goal are all also qualities that make a good project manager, and all also have some link to having an ability to lead effectively. More than this, a good project manager will be able to change their leadership approach to fit the team, the project, the organizational culture, and what specific tasks are required of the project.

3rd Question	How would you define Leadership with regards to project management?
Project Manager	I would define leadership in project management as the ability to successfully lead a group of team members working towards a common goal of accomplishing a project. More specifically, leadership needs to be adaptable, and versatile in approach given the ever-changing nature of projects and the fact that all projects will differ, depending on who is involved in the project and what the project is aiming to do. Another incredibly important factor for leadership in project management is the ability to be an innovator. More than this though, it is crucial that innovation is fostered in the team members so that people take responsibility and pride in the work that they are doing. This goes hand-in-hand with the idea of creating an atmosphere of independence, support, and motivation so that all of the project team members feel empowered to take risks with their thinking and initiative in their actions. Throughout all of this, leadership should encourage a focus on the end goal of the project so that it does not get lost in the process and all of the smaller tasks.

4th Question	**Based on a literature review and input from Subject Matter Experts like yourself, ten leadership factors appear to have the most positive effect on project success.** **1. Integration (Ideas and Teams)** **2. Balancing Objectives** **3. Systematic Information Capturing** **4. Commitment to the Project** **5. Motivational** **6. Innovative** **7. Idealized Influence** **8. Fast-action Decision Making** **9. Intellectually Stimulating Team** **10. Individualized Consideration** **Could these leadership factors interconnect in a way that would produce a higher project success rate compared to if they were employed on their own?**
Project Manager	Looking at the ten leadership factors, there are definitely a number of interconnections that can be made that would be beneficial to the project's outcome. The first leadership factor I would like to focus on is Integration. I saw beneficial interconnection to this leadership factor with Intellectually Stimulating Team, Balancing Objectives, and Systematic Information Capturing. For the connecting with Intellectually Stimulating Team, this leadership factor can be helpful to Integration because it challenges the team to think critically which can lead them to sort out their own issues and make much of the integration smoother. For the benefits of interconnecting with balancing of objectives, having a fully integrated team and integrated ideas can make it that

	much simpler for the project manager since there will be fewer competing objectives and a team who can help to sort out themselves how they should best attack the project to ensure that all objectives are being met. Finally, with regards to Systematic Information Capturing, Integration can benefit this leadership factor because it helps to make sure that all of the information that is being captured is compiled in one place and integrated properly so that it can be referred to for future projects. Another leadership factor I would like to focus on is Fast-action Decision Making. There were two other leadership factors that I think are worth noting for their beneficial interconnections. First is motivation. Team members and the project manager may need to make quick decisions. For everyone involved, motivation to make the project succeed and to finish on time can be beneficial fuel for ensuring that these decisions get made. The other beneficial connection is with innovation. A project manager who has innovative capabilities can use these in a spur of the moment crisis to come up with a solution quickly to avoid project failure. Lastly, in terms of leadership factors with interconnections of note, is Intellectually Stimulating Team. The two interconnections of relevance for me are Individualized Consideration and Commitment to the Project. Starting with the beneficial interconnection with Individualized Consideration, this leadership factor can help the project manager to figure out how to intellectually stimulate different team members, as everyone's brains function differently and what works for one person may not work for another. The second and final interconnection of note is the connection between Intellectually Stimulating Team and Commitment to the Project. A project manager being committed to the project is necessary for that project manager to put in the effort required to intellectually stimulate the team and therefore without one there would not be the other.

5th Question	**In your opinion, what effect do these leadership factors have on project success?**
Project Manager	Since all of the leadership factors have different ways in which they impact project success, I'll talk about each one separately. Starting with Integration, it has a positive effect on project success in a couple different ways. When talking about team integration, it has a positive impact because it makes sure that the team works well together. This means fewer disputes and issues which stall the project, which are both things that can threaten project success. When it comes to Integration of ideas, the impact on project success comes from the fact that non-integrated ideas can lead to missed information and missed connections in the process. This can cause projects to fail in a number of different ways and at various project phases. Lack of preparation can lead to issues arising from circumstances that were not anticipated or were incorrectly anticipated. It can also lead to problems with the project output never getting caught and therefore never getting fixed. The next leadership factor is that of Balancing Objectives which can benefit project success because it is essentially about having good organizational skills. The ability to balance objectives ensures that time and resources are kept in check

	throughout the project. If a project manager cannot manage to effectively balance all of the objectives competing for time and resources throughout the project lifecycle, the project can become challenged or even fail all together. Systematic Information Capturing effects project success in a positive way because, if done well, it creates a system of retroactive checks and balances. When issues with the output present themselves and it needs to be fixed, having a Systematic Information Capturing system in place allows for discovery of the root cause which can then lead to the issue being fixed before the project output is launched. As a bonus, it also has a positive impact on future projects - if referred to - as it can provide an idea of what things worked and what did not, allowing the project manager and the organization in general to learn from mistakes. Commitment also plays a role in project success. It is a very understandable concept to grasp. Essentially everyone involved in the project, including the project manager, needs to be committed to the project and have an understanding of the importance of its success. In doing so, it ensures a better chance of the project ending in a successful fashion. Motivational, another one of the mentioned leadership factors, has a beneficial influence on project success, particularly in cases where the project team is unsure of the project or the group is not completely engaged in the project at the start. If the project team is not motivated, then the various tasks required within the project may not get done to the level of quality that is necessary to make sure that the project is successful. Because of this, a project manager in this situation, who has an ability to motivate team members to engage in the project, can positively influence how successful the project is. When it comes to innovation, project success can be greatly influenced because the nature of projects is to innovate. Without innovation, projects run the risk of missing useful insights and solutions that could make or break a project. Because of this, fostering innovation in the project is incredibly important to its success. Next in the list, Idealized Influence is about having a project manager who can set a good example for how to approach the project, how to act in different situations, and how to interact with team members. In doing so, the project manager can create an atmosphere of motivation and innovation, where the team members feel comfortable putting in extra effort. This creates a climate where everyone is dedicated to the project and where team members work well together, all of which adds to the chance of a successful project outcome. Fast-action Decision Making is beneficial as it, when done properly, allows decisions to be made with a limited amount of information in a quick fashion. This ensures that the project does not get stuck waiting for a go-ahead from a project manager. Throughout the project, a lot of time-sensitive decisions are involved so this skill comes in handy often. Intellectually Stimulating Team is essential to aiding the team in thinking critically and finding ways to keep them engaged. First off, this is beneficial as it breeds innovative and critical thinkers and fosters independence in the project team. Second, it creates an atmosphere of engagement in the project, which helps to keep people invested in the projects. Lastly, Individualized Consideration improves the success in projects because it is a skill that enables the project manager to empower the team. Through a focus on individual's

	strengths, the project manager can place them in the project so that they are most engaged, and their skills are put to the best use. This and the empowerment factor together lead to an increased rate of success in projects.

6th Question	Can you describe the culture of each project phase and how it influences the decision on what leadership factors to employ?
Project Manager	I would definitely agree that there are some differences between the various phases in a project. Sometimes these can overlap a bit, and the culture is quite dependent on the organization and individuals actually involved in the project, as well as the structure of the project, and what the project is aiming to achieve - just to name a few. To give some more generally applicable cultural features of each of the project phases though is certainly possible. During the initiation phase, I would say that the project culture is definitely one of a collaborative nature. Lots of brainstorming and creativity involved, and not a very hierarchal structure. Once the planning phase commences it is a similar idea, very few individuals involved, a fairly collaborative and inclusive environment, but there the project manager does take a clearer role as the person in charge compared to what is often seen in the initiation phase. The knowledge and insights of those who are involved in the planning phase are important to ensure that a variety of different viewpoints are taken into account for the project plan. Once the execution phase commences, the project culture becomes one that is much more hierarchal in structure. This is because the project manager is dealing with a lot more people and it is important that the group has someone to lead them through the project. There is also present a lot of innovation in this phase, making for a unique culture where, although there is a clear form of hierarchal structure, everyone is still encouraged to have and use their voice. Once this phase ends, the monitoring and controlling phase comes in, in full force. This phase is usually partly overlapping with most of the previous phases if not all of them to ensure that the information captured is fresh and therefore more accurate. The atmosphere in this phase is very open, with lines of communication free flowing in all directions so that not piece of pertinent information gets missed. Finally, the closing phase occurs and there is a very different culture present. It is one of flux and change as the project ends and people involved get moved around, either back to regular jobs or moved to another project.

5. Company E

1st Question	How would you define Project Success?
Project Manager	For me, completing a successful project is really about making sure that we meet all of the objectives that we set out for the project, as well as the objectives set out by the project's stakeholders - including the client if there is

	one. If we have met those goals, and the project output functions well within its intended purpose, then the project should be considered a success. Even if the project ends up going a little over budget or taking a bit longer than we anticipated, it is still successful if we, or our client, end up putting that output to use. Alternatively, if the project was designed to solve a problem then it is successful if the project actually does solve the problem, we or our client needed it to solve. If we are working with a client, it is also incredibly important for our working relationship with them throughout the project to be maintained as it means that we can end up working on future projects for them.

2nd Question	**How would you define a good project manager?**
Project Manager	Within our organization, a good project manager is defined as someone who not only does all of the tasks required of them but goes above and beyond to ensure that the project they are working on becomes successful. This means of course, being able to balance all of the demands that are competing for the project manager's attention in a way that ensures all targets are being met and that the project stays on budget and on time. This also means being an individual with excellent leadership skills. Having an ability to motivate the project team, encourage them to be innovators and leaders themselves, take ownership of their actions and achievements, as well as being responsive to the needs of the team as all ways in which leadership skills help a project manager. Basically, having an ability to guide and empower any team of people throughout a project's lifecycle is an indicator of a good project manager. This, along with the ability to expand and improve the knowledge base of the team and the organization through information gathering, distribution, and learning processes, are key abilities of good project managers. As a quick last note, a good project manager is able to help guide and organize all of the finer details of projects while helping everyone to stay focused on the bigger picture goal of the project.

3rd Question	**How would you define Leadership with regards to project management?**
Project Manager	With regards to project management, leadership has a central role. I would define it as the ability to guide and direct a group of individuals to the completion of a common objective. More specifically, to the successful completion of an objective. Leadership tends to need to be a lot more adaptable when it comes to project management, because of the level of flexibility and change that projects often contain. Leaders also need to be adaptable because different projects are going to require different tactics and approaches, depending on a number of things including the culture of the company, the team members and their skillsets and outlooks, as well as what the project is focused on achieving. In project management, leadership also needs to have a high aspect of innovation. Projects are often related to

	discovering new solutions or developing new products or processes which means that innovation is an incredibly useful skill to have for everyone involved. The project manager then, should not only be innovative himself, but should foster innovation in the team members. Other important factors of leadership when seen in a project management situation include motivating the team, providing incentives to achieving goals, and supporting the team in whatever way they need.

4th Question	**Based on a literature review and input from Subject Matter Experts like yourself, ten leadership factors appear to have the most positive effect on project success.** **1. Integration (Ideas and Teams)** **2. Balancing Objectives** **3. Systematic Information Capturing** **4. Commitment to the Project** **5. Motivational** **6. Innovative** **7. Idealized Influence** **8. Fast-action Decision Making** **9. Intellectually Stimulating Team** **10. Individualized Consideration** **Could these leadership factors interconnect in a way that would produce a higher project success rate compared to if they were employed on their own?**
Project Manager	It is apparent that there are interconnections between the ten leadership factors that would increase the chance of success for a project. There are two leadership factors that I would like to focus on: Idealized Influence and Motivational. For Idealized Influence I noticed three other leadership factors that would be beneficially combined. The first factor was Intellectually Stimulating Team. By being a role model for seeking out intellectual stimulation so as to constantly be learning more and developing new ways of thinking and engaging, the project manager can create a culture where seeking out intellectual stimulation is normal, creating a more engaged team. Another leadership factor that has a beneficial connection to Idealized Influence is innovation. Again, fostering a culture of innovation starts with the project manager providing an example of what an innovator looks like and showing team members that it is not only acceptable but sought after to hone those innovative capabilities. In doing so, more ideas can be generated and things that may never have been discovered by the project manager alone, will come to light. Finally, Idealized Influence has a beneficial connection to commitment. This is primarily because if a project manager is not showing the project team that they are committed to the project, then they are being a bad role model and creating and showing their subordinates that the project is not important. This, as you can imagine, is highly detrimental to project success. In terms of the second leadership factor I would like to discuss, that is Motivational, there

	are a number of beneficial interconnections to other leadership factors that I noted as well. The first interconnection I noted was with Integration. Motivating the team to be engaged and passionate about the project and its success can aid the integration process because it means that everyone involved is on the same page and has the same goal in mind. With this mindset, people tend to be more cooperative and integration of the team members and their ideas goes much more smoothly. In addition, there is a beneficial interconnection of Motivational to Individualized Consideration. Individualized Consideration can be helpful in ensuring that the project team members are motivated as it shows that the project manager cares about the individuals involved in the project. People generally respond well to being considered, especially when they understand how they can impact a project. This makes them much more likely to be motivated to achieve project success since they feel included, and more importantly, pertinent to the success of the project. Finally, there is a beneficial interconnection between the Motivational leadership factor and Fast-action Decision Making. If people are motivated about the project and its successful completion, they will tend to take deadlines more seriously and engage in more critical thinking when it comes to Fast-action Decision Making.

5th Question	**In your opinion, what effect do these leadership factors have on project success?**
Project Manager	There are so many different ways that these leadership factors can impact the success of the project in question. While every single one of the leadership factors listed may not be useful for each phase in a project, there are usually multiple that are useful in a single phase. I would like to describe one example from a specific phase where some of these leadership factors were employed. The phase I will be talking about is the monitoring and controlling phase. This phase's responsibilities of course overlap with the rest of the project, particularly with the execution phase. Collection of data and recording and compiling this data into useful information is a central aspect of this phase. In the project in question, this was made known to the project team, and it was asked that they make sure to collect important data as they were performing the tasks asked of them throughout the project process. The definition of 'important' was not defined at the beginning and it started to become apparent that this had caused confusion which could impact the project's success. Some team members were over-recording data, that is including every possible thing that they did, and every single outcome. This was not ideal, given that all of this information had to be sorted through so that only the important information was identified. It was very clearly going to add extra time to the project's scope. On the other end, some project members were recording next to nothing with key points from actions and results being missed or forgotten. This was equally, if not more, detrimental to project success, since it meant that the missing information would have to be recalled much later on therefore being much more likely to be inaccurate, or it would just have to be omitted completely if it was not able to be recalled at all.

	Missing information can make it difficult to trace back problems to their root cause which makes it very difficult to fix. To fix this, some of the listed leadership factors were employed. First, Systematic Information Capturing was implemented. It was important that everyone be involved in the data collection process to the same degree - this meant that everyone had to be on the same page. To make sure that everyone was absolutely aware of what was expected of them, a guide was developed which outlined what they were supposed to be capturing in every scenario. A template to fill out and a step-by-step document were also developed so that there would be absolutely no confusion. As well, the team was briefed on the contents so that it was very apparent that every single person had gone through the documents at least once. There was definitely no room for excuses for not having written down the required data. I also wanted to make sure that this extra, and undeniably tedious step, was not simply handed to them as extra work. It was important that the team was on-board with the process and why it was important. To try to fix this, the Motivational leadership factor was employed. This was mainly done through incentives, recognising those that served as exemplary data recorders, and of course, reiterating the importance of both the project to the organization as well as the importance of data collection and compilation to the project. Members started to do just the right amount of data recording which meant that the project was not slowed down or impeded by excess or missing information. The boost in morale that the motivational efforts provided helped to keep the employees on task and happy, which is incredibly beneficial to project success. Overall, implementation of these leadership factors helped immensely in keeping the project on track, and once information was recorded properly, the issues that arose later on, once the outputs were in their testing phase, were actually able to be traced back to what went wrong and fixed before being launched. All of the trials and problems from doing things a certain way served to benefit more than just the project in question though. Future projects we undertook referred back to the documents created on this project and things that did not work were avoided, while things that worked incredibly well were integrated in the processes used for later projects.

6th Question	**Can you describe the culture of each project phase and how it influences the decision on what leadership factors to employ?**
Project Manager	Certainly. Projects themselves tend to have different cultures between one another but there are also noticeable differences within the phases of a single project. Starting with the first phase, or the initiation phase, I would describe the culture in this phase as open, collaborative, and democratic. There tends not to be a lot of hierarchy and there are only a select number of people involved in the brainstorming process so that it is not overwhelmed with opinions and ideas. Once the planning phase starts, the project manager takes a bit more of a directive role as they are the expert on project development. This being said, due to the equally if not smaller number of people involved in this phase as well as the need for input from key stakeholders, there is still an

	atmosphere of collaboration. Once the execution phase starts however, the number of individuals involved in the project increases by a lot and it is necessary for there to be a clear leader to guide everyone involved through the process and direct individuals in what they are supposed to do. Because of this, the culture in this phase does tend to be a bit more hierarchal. There is also an atmosphere of innovation though in this phase, and team members are generally still encouraged to provide input throughout the process. Once the execution phase is completed, the project moves fully into the monitoring and controlling phase, of which tasks were being completed throughout the previous phases as well. In this phase, while still hierarchal in the sense of having a clear leader and getting direction from them, there is also a much more open atmosphere to allow for the necessary flow of information required in this phase. Lastly, the closing phase of the project occurs and the atmosphere here is very busy and in flux. A lot of change is occurring, with individuals completing any closing duties, writing up documents, engaging with the end user, and eventually dispersing throughout the organization to previous roles or to work on new projects.

APPENDIX III – 2ND SURVEY (DURING THE INTERVIEW)

1. Question

How would you rate the importance level of the ten leadership factors with each project phase? Please take few minutes to complete this survey.

1.1. The Initiation Phase

1	**Integration (Ideas and Teams)**
A	Very Important
B	Important
C	Neutral
D	Not Important
2	**Balancing Objectives**
A	Very Important
B	Important
C	Neutral
D	Not Important
3	**Systematic Information Capturing**
A	Very Important
B	Important
C	Neutral
D	Not Important
4	**Commitment to the Project**
A	Very Important
B	Important
C	Neutral
D	Not Important
5	**Motivational**
A	Very Important
B	Important
C	Neutral
D	Not Important
6	**Innovative**
A	Very Important
B	Important
C	Neutral
D	Not Important
7	**Idealized Influence**
A	Very Important
B	Important
C	Neutral
D	Not Important
8	**Fast-action Decision Making**
A	Very Important

B	Important
C	Neutral
D	Not Important
9	**Intellectually Stimulating Team**
A	Very Important
B	Important
C	Neutral
D	Not Important
10	**Individualized Consideration**
A	Very Important
B	Important
C	Neutral
D	Not Important

1.2. The Planning Phase

1	**Integration (Ideas and Teams)**
A	Very Important
B	Important
C	Neutral
D	Not Important
2	**Balancing Objectives**
A	Very Important
B	Important
C	Neutral
D	Not Important
3	**Systematic Information Capturing**
A	Very Important
B	Important
C	Neutral
D	Not Important
4	**Commitment to the Project**
A	Very Important
B	Important
C	Neutral
D	Not Important
5	**Motivational**
A	Very Important
B	Important
C	Neutral
D	Not Important
6	**Innovative**
A	Very Important
B	Important
C	Neutral
D	Not Important
7	**Idealized Influence**

A	Very Important
B	Important
C	Neutral
D	Not Important
8	**Fast-action Decision Making**
A	Very Important
B	Important
C	Neutral
D	Not Important
9	**Intellectually Stimulating Team**
A	Very Important
B	Important
C	Neutral
D	Not Important
10	**Individualized Consideration**
A	Very Important
B	Important
C	Neutral
D	Not Important

1.3. The Execution Phase

1	**Integration (Ideas and Teams)**
A	Very Important
B	Important
C	Neutral
D	Not Important
2	**Balancing Objectives**
A	Very Important
B	Important
C	Neutral
D	Not Important
3	**Systematic Information Capturing**
A	Very Important
B	Important
C	Neutral
D	Not Important
4	**Commitment to the Project**
A	Very Important
B	Important
C	Neutral
D	Not Important
5	**Motivational**
A	Very Important
B	Important
C	Neutral
D	Not Important

6	**Innovative**
A	Very Important
B	Important
C	Neutral
D	Not Important
7	**Idealized Influence**
A	Very Important
B	Important
C	Neutral
D	Not Important
8	**Fast-action Decision Making**
A	Very Important
B	Important
C	Neutral
D	Not Important
9	**Intellectually Stimulating Team**
A	Very Important
B	Important
C	Neutral
D	Not Important
10	**Individualized Consideration**
A	Very Important
B	Important
C	Neutral
D	Not Important

1.4. The Monitoring and Controlling Phase

1	**Integration (Ideas and Teams)**
A	Very Important
B	Important
C	Neutral
D	Not Important
2	**Balancing Objectives**
A	Very Important
B	Important
C	Neutral
D	Not Important
3	**Systematic Information Capturing**
A	Very Important
B	Important
C	Neutral
D	Not Important
4	**Commitment to the Project**
A	Very Important
B	Important
C	Neutral

D	Not Important
5	**Motivational**
A	Very Important
B	Important
C	Neutral
D	Not Important
6	**Innovative**
A	Very Important
B	Important
C	Neutral
D	Not Important
7	**Idealized Influence**
A	Very Important
B	Important
C	Neutral
D	Not Important
8	**Fast-action Decision Making**
A	Very Important
B	Important
C	Neutral
D	Not Important
9	**Intellectually Stimulating Team**
A	Very Important
B	Important
C	Neutral
D	Not Important
10	**Individualized Consideration**
A	Very Important
B	Important
C	Neutral
D	Not Important

1.5. The Closing Phase

1	**Integration (Ideas and Teams)**
A	Very Important
B	Important
C	Neutral
D	Not Important
2	**Balancing Objectives**
A	Very Important
B	Important
C	Neutral
D	Not Important
3	**Systematic Information Capturing**
A	Very Important
B	Important

C	Neutral
D	Not Important
4	**Commitment to the Project**
A	Very Important
B	Important
C	Neutral
D	Not Important
5	**Motivational**
A	Very Important
B	Important
C	Neutral
D	Not Important
6	**Innovative**
A	Very Important
B	Important
C	Neutral
D	Not Important
7	**Idealized Influence**
A	Very Important
B	Important
C	Neutral
D	Not Important
8	**Fast-action Decision Making**
A	Very Important
B	Important
C	Neutral
D	Not Important
9	**Intellectually Stimulating Team**
A	Very Important
B	Important
C	Neutral
D	Not Important
10	**Individualized Consideration**
A	Very Important
B	Important
C	Neutral
D	Not Important

2. Results

Table 22: 2nd Survey Results – Initiation Phase (Likert Scale Responses)

1st	Project Phase: Initiation					
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Very Important	Very Important	Very Important	Important	Very Important
2	Balancing Objectives	Neutral	Neutral	Neutral	Important	Neutral
3	Systematic Information Capturing	Very Important	Very Important	Very Important	Very Important	Very Important
4	Commitment to the Project	Important	Important	Important	Important	Important
5	Motivational	Very Important	Important	Important	Important	Important
6	Innovative	Very Important	Important	Important	Very Important	Very Important
7	Idealized Influence	Neutral	Neutral	Important	Important	Important
8	Fast-action Decision Making	Not Important	Not Important	Not Important	Not Important	Not Important
9	Intellectually Stimulating Team	Not Important	Not Important	Neutral	Not Important	Neutral
10	Individualized Consideration	Neutral	Important	Not Important	Not Important	Not Important

Table 23: 2nd Survey Results – Initiation Phase (Likert Scale Values)

1st	Project Phase: Initiation						
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	4	4	4	3	4	19
2	Balancing Objectives	2	2	2	3	2	11
3	Systematic Information Capturing	4	4	4	4	4	20
4	Commitment to the Project	3	3	3	3	3	15
5	Motivational	4	3	3	3	3	16
6	Innovative	4	3	3	4	4	18
7	Idealized Influence	2	2	3	3	3	13
8	Fast-action Decision Making	1	1	1	1	1	5
9	Intellectually Stimulating Team	1	1	2	1	2	7
10	Individualized Consideration	2	3	1	1	1	8

Table 24: 2nd Survey Results – Planning Phase (Likert Scale Responses)

2nd	Project Phase: Planning					
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Very Important	Important	Very Important	Important	Very Important
2	Balancing Objectives	Very Important	Very Important	Very Important	Very Important	Very Important
3	Systematic Information Capturing	Neutral	Not Important	Not Important	Neutral	Neutral
4	Commitment to the Project	Very Important	Important	Important	Very Important	Important
5	Motivational	Neutral	Not Important	Not Important	Neutral	Neutral
6	Innovative	Important	Important	Very Important	Neutral	Important
7	Idealized Influence	Not Important	Not Important	Not Important	Neutral	Important
8	Fast-action Decision Making	Very Important	Very Important	Important	Important	Very Important
9	Intellectually Stimulating Team	Not Important	Important	Not Important	Neutral	Important
10	Individualized Consideration	Neutral	Not Important	Important	Not Important	Neutral

Table 25: 2nd Survey Results – Planning Phase (Likert Scale Values)

2nd	Project Phase: Planning						
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	4	3	4	3	4	18
2	Balancing Objectives	4	4	4	4	4	20
3	Systematic Information Capturing	2	1	1	2	2	8
4	Commitment to the Project	4	3	3	4	3	17
5	Motivational	2	1	1	2	2	8
6	Innovative	3	3	4	2	3	15
7	Idealized Influence	1	1	1	2	3	8
8	Fast-action Decision Making	4	4	3	3	4	18
9	Intellectually Stimulating Team	1	3	1	2	3	10
10	Individualized Consideration	2	1	3	1	2	9

Table 26: 2nd Survey Results – Execution Phase (Likert Scale Responses)

3rd	Project Phase: Execution					
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Very Important	Very Important	Important	Important	Very Important
2	Balancing Objectives	Very Important	Very Important	Very Important	Very Important	Important
3	Systematic Information Capturing	Important	Important	Important	Neutral	Very Important
4	Commitment to the Project	Important	Important	Important	Important	Important
5	Motivational	Very Important	Very Important	Very Important	Very Important	Important
6	Innovative	Important	Neutral	Important	Important	Very Important
7	Idealized Influence	Very Important	Very Important	Important	Very Important	Very Important
8	Fast-action Decision Making	Very Important	Very Important	Very Important	Very Important	Very Important
9	Intellectually Stimulating Team	Very Important	Very Important	Very Important	Very Important	Very Important
10	Individualized Consideration	Very Important	Very Important	Important	Important	Very Important

Table 27: 2nd Survey Results – Execution Phase (Likert Scale Values)

3rd	Project Phase: Execution						
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	4	4	3	3	4	18
2	Balancing Objectives	4	4	4	4	3	19
3	Systematic Information Capturing	3	3	3	2	4	15
4	Commitment to the Project	3	3	3	3	3	15
5	Motivational	4	4	4	4	3	19
6	Innovative	3	2	3	3	4	15
7	Idealized Influence	4	4	3	4	4	19
8	Fast-action Decision Making	4	4	4	4	4	20
9	Intellectually Stimulating Team	4	4	4	4	4	20
10	Individualized Consideration	4	4	3	3	4	18

Table 28: 2nd Survey Results – Monitoring and Controlling Phase (Likert Scale Responses)

4th	Project Phase: Monitoring and Controlling					
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Neutral	Neutral	Important	Not Important	Not Important
2	Balancing Objectives	Neutral	Important	Not Important	Neutral	Not Important
3	Systematic Information Capturing	Important	Very Important	Very Important	Very Important	Very Important
4	Commitment to the Project	Important	Very Important	Important	Very Important	Important
5	Motivational	Very Important	Important	Neutral	Important	Very Important
6	Innovative	Important	Neutral	Very Important	Important	Important
7	Idealized Influence	Important	Not Important	Neutral	Important	Neutral
8	Fast-action Decision Making	Very Important	Very Important	Very Important	Very Important	Very Important
9	Intellectually Stimulating Team	Important	Not Important	Important	Neutral	Not Important
10	Individualized Consideration	Important	Important	Very Important	Very Important	Very Important

Table 29: 2nd Survey Results – Monitoring and Controlling Phase (Likert Scale Values)

4th	Project Phase: Monitoring and Controlling						
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	2	2	3	1	1	9
2	Balancing Objectives	2	3	1	2	1	9
3	Systematic Information Capturing	3	4	4	4	4	19
4	Commitment to the Project	3	4	3	4	3	17
5	Motivational	4	3	2	3	4	16
6	Innovative	3	2	4	3	3	15
7	Idealized Influence	3	1	2	3	2	11
8	Fast-action Decision Making	4	4	4	4	4	20
9	Intellectually Stimulating Team	3	1	3	2	1	10
10	Individualized Consideration	3	3	4	4	4	18

Table 30: 2nd Survey Results – Closing Phase (Likert Scale Responses)

5th	Project Phase: Closing					
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E
1	Integration (Ideas and Teams)	Important	Not Important	Not Important	Not Important	Neutral
2	Balancing Objectives	Important	Neutral	Neutral	Not Important	Not Important
3	Systematic Information Capturing	Very Important	Very Important	Very Important	Very Important	Very Important
4	Commitment to the Project	Important	Very Important	Important	Very Important	Very Important
5	Motivational	Very Important	Neutral	Important	Important	Very Important
6	Innovative	Important	Not Important	Not Important	Neutral	Not Important
7	Idealized Influence	Neutral	Very Important	Very Important	Very Important	Important
8	Fast-action Decision Making	Neutral	Important	Very Important	Important	Important
9	Intellectually Stimulating Team	Important	Neutral	Neutral	Important	Important
10	Individualized Consideration	Very Important	Important	Important	Important	Important

Table 31: 2nd Survey Results – Closing Phase (Likert Scale Values)

5th	Project Phase: Closing						
#	Leadership Factor	Company A	Company B	Company C	Company D	Company E	Total
1	Integration (Ideas and Teams)	3	1	1	1	2	8
2	Balancing Objectives	3	2	2	1	1	9
3	Systematic Information Capturing	4	4	4	4	4	20
4	Commitment to the Project	3	4	3	4	4	18
5	Motivational	4	2	3	3	4	16
6	Innovative	3	1	1	2	1	8
7	Idealized Influence	2	4	4	4	3	17
8	Fast-action Decision Making	2	3	4	3	3	15
9	Intellectually Stimulating Team	3	2	2	3	3	13
10	Individualized Consideration	4	3	3	3	3	16

Table 32: 2nd Survey Results – Overall Rating for all Phases (Likert Scale Values)

*	**Overall rating for all project phases**					
#	**Leadership Factor**	**Initiation**	**Planning**	**Execution**	**Monitoring & Controlling**	**Closing**
1	Integration (Ideas and Teams)	19	18	18	9	8
2	Balancing Objectives	11	20	19	9	9
3	Systematic Information Capturing	20	8	15	19	20
4	Commitment to the Project	15	17	15	17	18
5	Motivational	16	8	19	16	16
6	Innovative	18	15	15	15	8
7	Idealized Influence	13	8	19	11	17
8	Fast-action Decision Making	5	18	20	20	15
9	Intellectually Stimulating Team	7	10	20	10	13
10	Individualized Consideration	8	9	18	18	16

APPENDIX IV – BUSINESS CASE STUDIES

1. Company A

1.1. Executive Summary

During the planning phase, it was noted that there was not enough internal knowledge about how to perform an accurate market analysis to properly price a new product. Due to this lack of knowledge, it was decided during the planning phase that outside help from a company specialising in market analysis would be brought in. Sadly, once the execution phase commenced, some issues started to present themselves. It started to become apparent that coordination between the internal team and the external vendor was more difficult than anticipated, given the differences in approach, understanding of the project, and conflicting knowledge bases. The external vendors also did not have a strong grasp of the industry they were operating within, which caused further issues, this time with the project staying inside the planned scope.

To deal with these issues, the project manager opted to employ certain leadership skills in a multi-tiered approach. Integration of the team was an incredibly useful leadership skill that the project manager employed. One solution utilized was to embed a subject matter expert from the internal organization to help the external vendors and doing the same with an external vendor in the internal team. Individualized Consideration was equally crucial, employed by the project manager so that both the internal and external team members were using their strengths in both approach and knowledge, thereby not trying to take on tasks that another individual was more qualified to complete accurately. Finally, the project manager used their ability to successfully balance all of the - sometimes competing - objectives to ensure that the project did not wander outside of the set scope, and that everyone stayed on task.

1.2. Business Problem

Knowledge is a valuable human-based resource that comes from individuals and their learnings through countless life experiences and academic teachings. Therefore, every person will have a different mix of knowledge based on what experiences they have had throughout their life and their academic history. When working in a business, the field within which the business operates will have an impact on who gets hired based on their knowledge of the industry. It is always important to have knowledgeable people working in an organization, but it is especially important for organizations that are in flux: either implementing changes, growing, or just starting up.

This being said, having a broad knowledge base within your firm can be expensive. Some organizations may not be able to afford to keep, on a full-time basis, team members who broaden the scope of knowledge to which the organization has access. In many cases it simply does not make financial sense to hire someone whose knowledge is only useful a small percentage of the time. Instead, many businesses opt to contract out work to other businesses who possess the relevant knowledge.

While this is a useful, and financially sensible option, it can cause issues. With the company in question, a project was being undertaken to re-price a product. The internal team did not hold

enough knowledge to properly perform a market analysis. To ensure that this particular step was done correctly so as not to negatively impact the company's finances, an organization specialising in market analytics was brought onto the project. It became apparent once the project was underway, that as knowledgeable as the external vendor team was, they had very little understanding of the manufacturing industry or how the company they were working with operated. Understandably, this lack of understanding was a serious issue that was impeding the progress of the project in a number of ways.

The external vendor's team members were incredibly knowledgeable about market analytics but their differences in knowledge translated into different approaches and viewpoints from those expressed by the internal team also working on the project. Tensions were rising between the two groups, with arguments slowing down the progress of the project. On top of this, the external vendor team's lack of understanding about the industry they were operating in and the business they were helping, was causing scope creep to occur. With internal team members preoccupied with their own work, the work being done by the external team was going relatively unchecked. Slowly, the scope of the various project metrics was getting broader, including the scope of finances, and the requested timeframe.

1.3. Solution

The project manager noticed as the execution phase got underway that these issues were cropping up and decided to take action. While one option would have been to let the team members (both internal and external) work through the issues themselves, the project manager decided to take a more proactive route as there was a tight budget and timeline for the project to be completed. The stated metrics left very little room for expansion from what the project plan had predicted, and with the bumps that had occurred so far, the project was already close to overstepping the set boundaries. Instead, the project manager opted to employ a number of leadership factors to remedy the problems and guide the project back on track.

2.1.1. Leadership Factor Effect

The first problem that the project manager noticed was the lack of coordination between the internal and external teams. To solve this, the project manager opted to employ the leadership factor of Integration to merge the two teams. This was not an easy task given the many differences between the teams. It became apparent that in order for a cohesive integration to occur, some of the gaps in knowledge and understanding would have to be bridged.

To do so, the project manager employed one member from the internal team and one member from the external team to act as 'subject matter experts'. These two individuals were placed on opposite teams; the external subject matter expert on the internal project team, the internal subject matter expert on the external vendor team. Each subject matter expert fielded questions and gave input to the team members as they worked through their responsibilities on the project. By sharing information through these subject matter experts, the teams were better equipped to understand one another, and the project moved forward much more quickly and in a much more unified fashion.

The other problem that the project manager noted was that the external vendors did not have a very solid understanding of the manufacturing industry they were working within. Having a subject matter expert helped with this but, in some cases, it seemed to make matters worse.

Some external team members started to operate under a false sense of understanding after asking one or two questions, filling in any gaps with the knowledge they had of their own field of study, and moving forward without double checking with the subject matter expert. Once the project manager started to notice this, another leadership factor was employed.

The leadership factor employed by the project manager at this point was Individualized Consideration. This required the project manager to take a more hands on approach and work with each external team member to discover what their distinct strengths and weaknesses were. The same thing was done with the internal team so that a full understanding of the project team's skills could be achieved. This was done on an individual level as well as on a team level. Discussions were had about what skills the team felt confident in, and where people felt they had less knowledge. The idea being that by discussing where people felt most confident, tasks could be formally allotted to those that were best equipped to handle them. Using a discussion and helping to guide people to focus on their strengths, the project manager achieved this without having to use the more abrasive method of ordering people around or telling them how they were currently operating was wrong.

To ensure that everything continued to stay on track now that the project was running smoothly, the project manager employed the third leadership factor which was the ability to balance objectives. Because the project was working with an outside vendor, there was an added stakeholder involved and a more complicated set of objectives throughout the project's execution phase. This made it even more crucial for the project to reach all of the set objectives on time. Through the use of this leadership factor, the project manager was able to ensure that every team member stayed on track, their skillsets used to the highest capacity, and that the project finished each objective within the set scope.

1.4. Benefits and Value

Using each of the aforementioned leadership factors, the project manager was able to keep the project running on track and within the designated scope. To start, knowing how to integrate groups of people with different values, approaches, knowledge-bases, and viewpoints, is a valuable skill that served to redirect the project. Even more importantly, the use of this leadership factor provided added benefits that the project manager had not considered. By integrating the teams, the external vendor gained beneficial insight into the manufacturing industry that they otherwise never would have received. Having this insight made it easier for the external vendor to market their services to other companies in the manufacturing industry. More than this though, it provided the benefit of an ally for the company should they require marketing services from the external vendor again. The company themselves also gained valuable knowledge from the integration, with certain team members having a greater understanding of the marketing field. This meant that smaller questions or issues that might present themselves in the future would not need an outside vendor, thus saving the company money and time in the long-run.

The employment of the leadership factor of Individualized Consideration also benefitted the project immensely. By helping each team member to find their strengths and guiding them towards the notion of doing those tasks in which their strengths lay, the project manager directed the project to be completed more efficiently with fewer incidents where mistakes needed to be rectified. It also served to empower team members by focusing on their strengths rather than simply telling them what they had to do and instructing them to not do

anything other than what they had been told. This increased team morale and led to innovative solutions that otherwise might not have been discovered.

Finally, the ability to balance all of the competing objectives presented further benefits for the project. Of course, it served the purpose of getting all of the objectives finished on time and on budget, which was important. More than this though, it presented a good image of the company to the external stakeholders, specifically the external vendor who now saw the company as having an excellent reputation for finishing projects with quality results both on time, on budget, and with keeping all of the key parties' competing interests in mind.

Overall, the use of leadership factors had numerous benefits to the project. From the intended benefits of completing the project, to the added benefits of developing team members and relationships with other companies. It is apparent that the leadership factors chosen to solve the issues presented were valuable assets and aided the project manager in solving issues and keeping the project on track.

2. Company C

2.1. Executive Summary

During the planning phase, stakeholders from the various key business departments were involved in developing the scope of the project. This included a representative from the departments of Finance, Human Resources, R&D, and Purchasing. While this was still fewer people involved than would be employed during the subsequent phases, each individual represented a different viewpoint on the organization. These key stakeholders and their unique viewpoints would benefit the project in the long run, ensuring no information was overlooked. While it was important to have the various opinions involved, it made the planning difficult because of the sometimes-conflicting ideals, requirements, and expectations for the project. As discussions for project scope and key objectives ensued, it became apparent that there were some points of contention between the stakeholders.

To rectify this, the project manager opted to employ some leadership factors in order to smooth out the process. The first leadership factor put to use was that of Integration of ideas to ensure that each department got what they needed, and the scope was boiled down to the essentials. They also implemented the use of Innovation to find ways to balance all of the competing objectives that the department heads wanted to include for the project. This was done through a series of constructive meetings and project 'wish lists' written up by each department stakeholder. By getting each individual to solidify their ideas in written form, they were able to have a constructive discussion about which items were pertinent to the success of the project and which were merely added benefits should they occur.

2.2. Business Problem

Planning a project means taking into account considerations from every department in the business. While a project manager may be able to conceptualize some of the issues that are important, they will not have the in-depth knowledge that individuals who work in each department will possess. To ensure that valuable insight and information about a business does not get missed, during the planning phase it is wise for a project manager to work with, or at least consult, individuals from each department.

During the project in question, department heads from the Human Resources, R&D, Finance, and Purchasing were brought on to aid the project manager in the planning process. Specifically, they were there to identify any potential issues that might arise, and aid the project manager in deciding what metrics were necessary to include in the scope of the project. This was necessary given that the project manager did not have much knowledge in Finance or Purchasing, and limited insights into the other two departments of interest. Despite the benefits of bringing together the department heads to help conceptualize the project, the differences in interests and viewpoints on the organization started to present some issues.

Each department head had their own ideas about what should be included in the project scope and, with so many items to include, the project manager knew that the budget and time requirements would be unattainable. Furthermore, some of the department heads' ideals were conflicting with each-other, making it impossible to include every departments' requests even if they had the resources. Key metrics and objectives for the project were also discussed with much the same results – too many ideas – and too many conflicting ideas. These conflicting opinions were also starting to cause tension between the key stakeholders, making discussions more difficult as tensions and negative emotions started to rise.

2.3. Solution

The project manager, recognising that the project planning was stalling with all of the conflicting ideas, decided that something needed to change. It did not appear that the department heads were doing anything to make compromises, and it was starting to get to the point where it was unclear if they were truly thinking critically about what would be best for the project. Instead of continuing to let the department heads attempt to sort through their requirements themselves, the project manager decided to step into a slightly more autocratic leadership role. A number of leadership factors were employed as well, so that the project manager could get the project back on track.

2.3.1. Leadership Factor Effect

First, the project manager decided to employ the use of Integration of ideas. It was very apparent that the department heads were having a difficult time integrating all of the ideas and educated opinions that they were bringing to help make sure the project ended up successful. To resolve this, the project manager devised a way to reframe the situation and guide each department head through the process. The project manager was aware that many of the ideas and concerns being brought forth by the department heads were not key, but instead extras that would be welcomed should it be possible to include them. It was important for everyone involved to understand the importance of boiling down the metrics and scope so that only the truly necessary and beneficial things were included.

The discussions were temporarily halted, and the project manager took a chance to review the project again with the stakeholders. The objective of the project was reiterated with an added explanation about how important it was for everyone involved to provide critical input, so the project had a higher chance of success. With a renewed frame of mind, the project manager hoped that the department heads would get a chance to revisit what they were aiming for and think critically about what was necessary and what was not. This was only the first step however. Once the project manager had gotten everyone to step back for a moment, he decided to employ yet another leadership factor in tandem with the Integration of ideas.

The project manager was not entirely convinced that simply getting everyone to take a moment to think would be enough to get all of the departments to start integrating their ideas. Instead, it was taken a step further and a new leadership factor employed. Innovation was utilized by the project manager in order to find a unique way of fixing the squabbles between the department heads. While one option would have been to simply make the judgement calls and taken charge, the project manager did not feel comfortable making those decisions. This was namely because there were some departments that the project manager truly did not know enough about. If this route were taken, key metrics would be missed, while other non-essential ones included, bogging the project down.

Instead, the project manager opted to use a thought experiment of sorts to engage the department heads and force them to think critically and make the judgement calls on the issues where they had the most knowledge. Each department head was asked to write up a 'wish list' containing all of the items they thought important or relevant to the success of the project. On their wish list, they were required to identify which of the items were crucial to project success and which were merely added benefits. Afterwards, constructive meetings were held individually by the project manager with each department head so that they could discuss one-on-one the various metrics and requirements for the project.

For each point deemed a necessity by the department heads, they were required to back it up to prove its importance. Once each department head had completed their meeting and boiled down their list to the key features, the team of department heads was brought back together. Discussions commenced moving with more ease now that there were fewer items being discussed. The project manager was able to benefit from the input of the department heads without feeling bogged down by excess information and requirements for the project. The scope and key metrics were solidified, and the project was able to move forward to the next stage.

2.4. Benefits and Value

Employing these leadership factors was incredibly helpful to the project's eventual success. The project manager was aware how important it was to involve all of the departments in deciding the scope of the project and identifying the various metrics. Their input was valuable to make certain that the project scope did not leave out any considerations that would alter the project, potentially leading to its failure. While crucial, it was not an easy process, and the project manager's use of relevant leadership factors allowed for the facilitation of discussions and helped to keep the project planning stage on track.

Aside from the apparent benefit of keeping the project on track and ensuring that the scope was appropriate for the project, the employment of these two particular leadership factors also had some hidden, secondary benefits to the organization. The department heads benefited a great deal from the experience. They gained valuable skills about project work and requirements and were also given an opportunity to learn how that setting requires a more engaged type of teamwork. The benefit to the project manager, and any other project managers that undertake projects in the organization, was that they now had department heads they could rely on for pertinent information, but also to work together and form a cohesive plan that covered all of the business bases – without as much supervision from the selected project manager. Undertaking knowledge transfers, and teaching key stakeholders what is required to put a project together was a good way to benefit future projects and add value to the company.

3. Company E

3.1. Executive Summary

Throughout the entire project, but specifically during the monitoring and controlling phase, collection of data is central to project success. This was known by the project manager. Therefore, early on in the project life-cycle, the project manager had made it known to team members that it was part of their requirement to record information on key project metrics. Some team members were doing a good job of ensuring that pertinent data was recorded. Other members were not doing their part, thus key information was being missed and forgotten. The project manager knew that this was going to present serious issues later on and may impact the deliverables of the project if issues were not caught early on.

To remedy the problem, the project manager decided to use a few key leadership factors. First, they decided to utilize Systematic Information Capturing. To do so, they developed a system and step by step document that could be easily followed. Thus, they ensured that the information collected by each team member was systematic and followed a formula to capture any required information. They also employed the use of motivational tactics as a supportive factor to get employees who were not as engaged to follow through with the remainder of the project duties. This was done mainly through incentives, rewarding those employees who did what they were supposed to recognising those who went above and beyond expectations.

3.2. Business Problem

Collection of data is an important step during the project lifecycle. It ensures a record is kept so that issues can be tracked back to their root cause, it helps people to write up accurate reports post-project, and it is a useful way to compare steps and results to future projects, so that pitfalls can be avoided. Data collection is something that is often done throughout the lifecycle of the project but comes into particular importance during the monitoring and controlling phase when everything is being double checked, tracked, and enhanced.

During the project in question, it had been requested that data be gathered throughout the execution phase and into the monitoring and controlling phase. The project manager started to notice however, that not everyone was doing the same quality of data collection. Some people were recording too much information and others were barely recording anything at all. This was an issue, because it meant that pieces of information and key perspectives would be missing while other perspectives would be so bogged down with irrelevant details that time and resources would be wasted trying to find the key points.

The project manager was aware that both ends of the spectrum, but particularly having sections of completely missing information, would be incredibly detrimental to the project. The missing information could end up being something pertinent to the success of the project, perhaps indicating an issue that was not overtly apparent but would cause the project to break down if not addressed. Because of this, the project manager decided that something needed to be done and devised a solution to the issue.

3.3. Solution

Ensuring that all of the project team members were participating in data collection meant that the project manager had to devise a plan to keep every member responsible for their own

sections of the project. While one option would have been to enact severe consequences for those who did not follow through with keeping records throughout the project lifecycle, the project manager wanted to use a softer approach that was structured but also motivated team members to take action of their own accord, rather than forcing it upon them. Therefore, the project manager decided to employ a couple of leadership factors to help facilitate this process.

3.3.1. Leadership Factor Effect

The first leadership factor that the project manager chose to employ was Systematic Information Capturing. The project manager realised that one of the reasons there was such a spread in the quantity and quality of the information being recorded by the team members was because none of them were completely sure what they were expected to be recording. This caused some people to record much more than was necessary, capturing a ton of extraneous information along the way, while simultaneously gave other individuals an easy excuse to record next to nothing while they completed their project duties.

To resolve this problem, the project manager developed a guide that outlined what information they were needing to capture, why they needed to capture it, as well as providing a step by step document that could be easily filled out. The team was also briefed on the new document so that everyone was aware that this was a requirement of the project added alongside their regular duties. No more and no less was needed to be recorded throughout the project. In structuring a document, the project manager found a way to standardise the data recording process. This made it much simpler and straightforward for all of the team members.

The project manager also realised that it was important to not simply direct team members on the project. It was apparent that some of the team members were not happy with the standardisation and were subsequently doing a less than satisfactory job on the input sheets. Some of the team members appeared to become less engaged in the project in general now that they had extra work to do for each step in the process. The project manager wanted the data recording step to feel like less of a burden and so another leadership factor was employed to increase the morale of the team.

The leadership factor the project manager chose to employ was motivation. Motivational tactics were employed to boost morale and induce an increase in the efficiency and quality of work being performed by the team members. This was mainly done through the use of incentives. The project manager provided incentives for team members to do the added work they had been given, making it almost into a competition of who was able to collect the most key points. The incentives were small, and often food related, but they served the purpose of re-invigorating the team and their determination to bring the project to a successful completion. For those employees that went above and beyond, the project manager also went above and beyond by formally recognising the accomplishments of those team members. This helped to boost the confidence of team members which in turn made them work harder and stay more focused.

3.4. Benefits and Value

The data collection process can be long and a tedious extra step. While it is not the most enjoyable part of project development, it is an important part and should be taken seriously because of the copious benefits that it can provide to a project. Having team members who

are slacking in their responsibilities for recording data can lead to serious gaps that can impact the project's success.

As an obvious benefit, the use of the leadership factors of Systematic Information Capturing and motivation helped to refocus the team members and aided them in working more diligently on the project. As mentioned, missing pieces of information could mean that issues go unaccounted for until it is too late. While not always the case, this can lead to the failure of the project. Having team members motivated to do their work, meant that the project would run more smoothly.

Of course, this was not the only benefit to the project that these leadership factors provided. Less apparent benefits occurred as well. One such benefit came from the implementation of the Systematic Information Capturing system that the project manager devised. It proved to be highly valuable to the project in terms of standardising the input information which in turn made for less work later on when the information was being reviewed to sort out issues and write up project reports. This meant that fewer valuable resources were spent focusing on filling in blanks, tying varying data recordings together, and simplifying over-extended recordings. These resources were then able to be used elsewhere in the project. On top of this, the implementation of a standardised system benefitted future projects as well. It provided a format that could be easily updated as necessary to fit a different project's requirements, thus ensuring that all projects moving forward within the organization would save time and energy.

In addition, utilizing the leadership factor of motivation was incredibly beneficial to the project as a whole. While continuing to have motivated and engaged team members is important no matter the stage that the project is in, it tends to be much more difficult to maintain during the more tedious tasks required of the monitoring and controlling phase. By providing incentives to the team members and making the more tedious tasks a bit more enjoyable, the overall morale of the team was increased, the quality of work improved, and as an added benefit, the team members were more likely to request working with the project manager on future projects. This added benefit was useful given that many of the team members were highly knowledgeable and would be assets to future projects.