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Developing a case for a more granular examination in the selection of information technology job roles most suitable for outsourcing and offshore placement

Robert A. Moscardini

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Developing a Case for a More Granular Examination in the Selection of Information Technology

Job Roles Most Suitable for Outsourcing and Offshore Placement

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Capstone II – MBA 532

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February 18, 2015

SIGNATURE PAGE

This Master's Thesis meets the requirements set by the curriculum of the College of Business and Management, Cardinal Stritch University, and has been approved by:



Dr. Katrina Moskalik, Academic Advisor

5/15/15

Date

Reader

Date

Dedication

This work is dedicated to those on whose love and support I depend on a daily basis.

To my Mother who saw me begin this journey, but was unable to follow.

With a Mother's love, she always assumed I would do great things.

To my Father, who taught me to love, to laugh at life, to never take myself too seriously, and that it takes more than fatherhood to be a dad. Though he didn't see me start, he always knew I would.

To my children, who keep me humble, as they should:

My son Bob, whose courage inspires me, though it will embarrass him to hear it;

My daughter Cynthia, whose ambition inspires me to reach ever higher

My daughter KC, whose energy inspires everyone near her;

My daughter Stephanie, whose determination inspires me to never back down;

My son Carl, whose passion for life knows no bounds;

My son John, who gives me hope that the next generation will be greater than my own;

And most importantly, this work is dedicated to my wife, Deborra.

You encourage me, inspire me, and teach me each day, that no matter the difficulty, you can achieve great things. With you as my partner, I can do no less.

God Bless you all.

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The sense of accomplishment that I feel in the work herein would not be possible without the dedication and help of a number of individuals who guided, encouraged and prodded me down this long road. I would like to express my sincere gratitude to the faculty of the College of Business at Cardinal Stritch University who helped – and sometimes pushed – me to do the best I could possibly do. I would like to thank my fellow students who each shared with me the value of their experience, knowledge, and wisdom. And I would especially like to thank my academic advisor, Dr. Trina Moskalik for her impossible demands, without which I would not have achieved the quality of work that I once thought impossible.

I would like to acknowledge the contribution of my mentor, W.H. Clark, Jr., who put up with silly questions, shared the benefit of his wisdom, and contributed his understanding in this effort and so many others. You took time from your busy life whenever I asked it of you, and supported me in ways only you and I know. You and your wife, Callie Anne are truly remarkable individuals and I am proud to call you my friends as well as my family. Thank you for all you have done.

I would also like to acknowledge the contribution that George Ciesla and Davis Bothe made to my education. George, an instructor at Cardinal Stritch, performed the miracle of teaching me accounting. Many have tried, but you actually achieved it. Dave, you showed me the wonders of Six Sigma, and the use of statistics as a crystal ball. You both were able to make math interesting and this thesis possible. Thank you for that gift.

Finally, I would like to acknowledge that without God, nothing is possible. With His guidance, the impossible is achievable. At times, I doubted, but you never did. Thank you.

EXECUTIVE SUMMARY

This study reviewed shortcomings present in the process of selecting the scope of offshore outsourcing vendor usage. While extensive financial cost information is available to companies considering this alternative, there is little mentioned of the quality of service performance experienced by the internal work teams that act as the primary consumers of these contracted services. Additionally, it is common practice to contract offshore outsourcing on a project or departmental level without granular examination of suitability at the job role level.

This study surveyed a representative sample ($n = 30$) of IT professionals, and addressed two related research questions regarding internal value return. The first questioned whether a satisfactory level of overall job performance is returned by holistically-outsourced IT services to offshore vendors and results were inconclusive. The second examined if differences were present between work teams responsible for various IT functions, indicating a need for more granular consideration and found significant differences between work teams' needs.

As to the first research question, results were calculated from the aggregate mean of each departmental review with which the respondent had direct experience. Overall job performance satisfaction was measured using the t-test methodology as minimally sub-par, with insufficient significance to reject the possibility of sampling error, $t(22) = 2.57, p > .05$. As to the second research question, departmental satisfaction ratings in 10 factors relevant to service delivery were analyzed for variation in order to determine if significant valuation differences were present. Significant variation present in satisfaction levels between teams are representative of variation in factor importance by department. Three discrete departments – Application Development, Server Operations, & Solutions and Architecture were examined. An analysis of variance showed that the effect of performance factor was significant $F(9, 27) = 304.434$,

$p < .001$ that the effect of work team was significant at $F(3, 27) = 43.190$, $p < .001$. As both performance factor and work team variations were significant above the confidence level (95%) chosen as the threshold, the null hypothesis that there was no variation in factor delivery efficacy was rejected.

The results of the second research question of whether a more detailed and granular examination would reveal differences in factor importance – or the difference in emphasis on one factor over another, a statistically significant finding that such differences are present was found. Significant differences in value perception present between individual work teams and the collective totals indicated that each work team was unique in their expectations – and valuation – of services provided.

In order, therefore, to provide optimal value, a more granular examination of each position or team to be outsourced should be conducted in order to reserve those positions that do not perform well for in-house performance, and only outsource those positions likely to do well to an offshore vendor. As each company requires its own unique mix of IT management needs appropriate their situation, each IT work team was found to have a level of unique need as well. These needs define work team satisfaction levels with services provided. Additionally, companies that avoid single factor decision-making with regard to offshore outsourced vendor use may see more optimal results. For the same reasons outlined above, the service delivery performance seen by internal work teams reflect the quality of work performed by the vendor. If such value degrades below satisfactory levels, it is possible to erode the savings realized by cost incentives to a negative return.

Table of Contents

Dedication	ii
Acknowledgements	iii
EXECUTIVE SUMMARY	iv
List of Tables	vii
List of Figures	viii
CHAPTER ONE: INTRODUCTION	1
Statement of the Problem	1
History of the Problem	2
Conceptual Framework and Evolution of Thought	2
Focus Company and Industry Background	5
Need for Further Study of the Problem	5
Direction	6
Existing Research	6
Statement of Purpose	7
Nature of the Study	8
The Proposed IT Professionals Survey	9
<i>Research Question #1 and Associated Hypothesis</i>	9
<i>Research Question #2 and Associated Hypothesis</i>	10
Definitions, Scope, Limitations & Delimitations, & Assumptions	11
Scope of Study	13
Limitations of Research	13
Delimitations of Research	14
Assumptions	14
Relationship of the Issue to People, Planet, and Profit	15
Chapter Summary	16
CHAPTER TWO: LITERATURE REVIEW	18
Outsourcing	19
IT Trends	30
Literature Gap	33
Chapter Summary	34
CHAPTER THREE: METHOD	36
Research Method & Design Appropriateness	36
Method Advantages & Disadvantages	38

Independent and Dependent Variables	39
Research Questions & Hypotheses	40
<i>Research Question and H1: Overall Value Returned</i>	40
<i>Research Question and H2: Work Team Differences Present</i>	42
Population	43
Sample.....	43
Informed Consent, Confidentiality, and Ethical Concerns	44
Research Instrument.....	45
Validity	46
Data Collection	47
Data Analysis	47
Chapter Summary	51
 CHAPTER FOUR: RESULTS	 53
Data Collection	53
Demographics	54
Data Analysis	56
Hypothesis 1 Analysis: Overall Value Returned	57
Hypothesis 2 Analysis: Work Team Differences Present.....	59
Collective Analysis	62
Departmental Analysis.....	62
Chapter Summary	64
 CHAPTER FIVE: CONCLUSIONS	 66
Discussion.....	66
Results.....	68
Research Question 1: Overall Value Returned	69
Research Question 2: Work Team Differences Present.....	71
Significance of Findings	74
Study Delimitations	77
Study Limitations.....	79
Recommendations for Further Research.....	81
Conclusion	82
 APPENDIX A: INVITATION TO PARTICIPATE IN ONLINE RESEARCH.....	 93
 APPENDIX C: IT PROFESSIONALS SURVEY QUESTIONS	 95
 APPENDIX D: CARDINAL STRITCH UNIVERSITY THESIS SUBMISSION FORM	 100

List of Tables

Table 1: Independent and Dependent Study Variables Used.....	39
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DEVELOPING A CASE FOR MORE GRANULAR EXAMINATION	viii
Table 2: Sample Demographics	54
Table 3: Respondent Demographic Information.....	55
Table 4: ANOVA of Factor Delivery Performance Ratings between IT Work Teams	64

List of Figures

Figure 1: Respondent Overall Reported Job Performance	59
Figure 2: Correlative Analysis of Collective and Departmental Perceptions	60
Figure 3: Collective & Departmental Factor Delivery Performance Analysis	63

CHAPTER ONE: INTRODUCTION

The title of this thesis, “Developing a Case for a More Granular Examination in the Selection of Information Technology Job Roles Most Suitable for Outsourcing and Offshore Placement” reflects a need for further academic study as to the long-term consistent use of offshore outsourcing as a corporate strategy. Recent events at GE – including the reversal of a decades-old policy of outsourcing IT and manufacturing functions overseas – have revealed a need to examine more appropriate motivations for the practice of offshore outsourcing, and develop a set of guidelines for the suitability of individual job roles within the overarching IT function for offshore placement utilizing external vendors.

The goals of this study were to determine if internal value gain or loss was perceived by companies currently engaging in this practice. This study attempted to first develop an understanding of industry perceptions of value returned by stratified, functional subdivisions of the information technology (IT) duties necessary in modern commercial organizations; and second to provide guidance as to the suitability and advisability of outsourcing and overseas placement through the examination of differences present in the valuation of service delivery perceptions. Further, this thesis argues that financial cost should not be the predominant factor in offshore placement of labor, and that a value proposition for each functional job role should be considered separately.

Statement of the Problem

The problem statement addressed by this thesis was that a gap exists in the knowledge needed to effectively assess IT job roles for offshore outsourcing at a granular level, in which

factors important to individual internal work teams dependent on the offshored vendor's product are neglected. This thesis will address this gap through an examination of the logical divisions of labor within the IT function of technology manufacturers in general, and General Electric (GE) in specific; determine logical delimitations present in the experience, expertise, training and strategic authority levels of IT personnel; and present a logical tool for use in evaluating IT labor duties for outsource and placement in offshore locations for the purpose of value return based on factor importance.

History of the Problem

Offshore outsourcing was the practice of contracting with external companies for the purpose of performing tasks normally performed internally within an organization. This practice – as it applied to the performance of information technology (IT) management tasks - was done for a variety of reasons, including the reduction of costs (Lacity & Hirschheim, 1993; Martorelli & Benkel, 2015). If cost was used as a basis for the use of offshore outsourced labor, it seemed sensible to measure not only cost savings generated by a lower labor cost provided by an external vendor, but also the impact internally to essential IT management tasks through any reduction of service quality.

Conceptual Framework and Evolution of Thought

The genesis of thought behind this problem statement was the offshoring of a substantial number of IT jobs from GE's Wauwatosa, WI facility in large part to an India-based company in 2006 (Ribeiro, 2006). This was followed less than three years later by their announcement of the re-shoring of 1,100 IT jobs to a new Van Buren Township facility, 25 miles from Detroit, MI (Layne & Trudell, 2009). This reversal of the offshoring trend at GE and other companies seen in

the news media led me to believe that this phenomenon would be an interesting topic for research. Additionally, personal experience in the IT industry add to its potential for interest.

As the initial research for this study evolved, the topic was narrowed further to address the question of whether the cost savings realized by using less expensive labor available in other countries – primarily India – was sufficient to compensate for any reduction of quality, inconvenience of location, or infrastructure issues presented by any distance, cultural or language barriers present. This problem presented the need to separate out the IT-specific labor costs – as well as the IT headcount impacted – for GE. The organization reports such figures, however, in a consolidated format that inhibits such separation. Given the purpose – discussed later in this chapter – of this information’s potential use for the guidance of future offshoring decisions, and the ease of comparison given internal information and a comparison with quote service delivery prices, this element was dropped from consideration.

The measurement of service delivery value, however, presented interesting potential for study. The problem was further focused at that point, to the quantification of service delivery value to the client organization. Utilizing published reports, it became apparent that companies were reluctant to admit to shareholders that expensive shifts in organizational structure and infrastructure investments were done in error. It became impractical to separate political spin from actual performance using this means.

Another, more precise method was available via the primary, first-hand consumers of services provided by offshore service vendors. Internal work teams directly receiving benefit from the service delivery quality of offshore vendors were certainly able to speak directly to the performance quality provided. The problem statement was further refined to address the gap present in existing knowledge needed to effectively assess IT roles considered for offshoring,

using a granular – rather than a holistic – approach that can select individual roles most suited for such placement.

Focus Company and Industry Background

General Electric will serve as a focus company for this study. GE is one of the largest corporations in the world, and was founded in 1892 through the merger of the Edison Electric Company – led by Thomas Alva Edison – and the Thomas-Houston Company. Originally a manufacturer of power-related products – from electric lamps to huge power generators – the company has invented thousands of products over its history. GE’s industry, as defined by its major competitors and broad product definitions, fits the definition of manufacturer of Electronics and Other Electrical Equipment (SIC-3600). The industry produces a huge array of technological equipment, much of it designed for industrial and medical use in a global market.

The Electronics and Other Electrical Equipment industry is globally competitive and GE is its largest company in both market capitalization and net income. GE’s net income in 2013 was \$13.2 billion, as compared to an industry average of \$339 million. The second and third largest competitors - by market capitalization - were Siemens AG (\$4.9 billion) and 3M Company (\$4.8 billion) (Morningstar, 2014). The company serves as an ideal focus company as they were one of the first to adopt a systematic use of offshore outsourcing. “In the early 1990s, former General Electric (GE) chief executive Jack Welch declared that "70-70-70" would be his company's rule for sending technology work offsite: 70% would be done by outside suppliers, 70% of that overseas, and 70% of that in India” (Kalakota & Robinson, 2005; Khatri, 2004).

Need for Further Study of the Problem

In recent events, however, the company has reversed itself. Current GE CEO, Jeffrey Immelt, introduced the course change in 2012 by declaring that “outsourcing that is based only on labor costs is yesterday’s model” (Immelt, 2012). Immelt’s statement on motivations other than

simple cost considerations show a clear need to evaluate more than just price when considering the migration of internally-staffed positions to offshore vendors. “A growing number of American companies are reversing that trend, bringing manufacturing back to the United States in a trend known as "reshoring" (Northam, 2014). This reversal presents a change in existing perceptions present in the view of offshore outsourcing, and a clear need for academic study.

Direction

This thesis will break down the overarching IT function into logical subdivisions, and examine performance perceptions and trends present in each. Additionally, each subdivision will be further divided into generally-accepted levels of expertise and authority. A scoring system will be developed that will recommend the suitability of both outsourcing and overseas placement candidacy based on actual experience reported through a survey presented to a targeted audience of IT Professionals.

Existing Research

Much academic attention has been paid to the question of both the practice of outsourcing and the location of IT assets and labor offshore. Academic research into the suitability of individual sub-functions within the IT function, and driving factors regarding the perceptions of offshore vendor performance held by IT work teams, however, is rare. A review of existing research into outsourcing as a practice, the use of offshore vendors, and trends present within IT regarding the use of offshoring and reshoring – or the practice of returning IT work teams to U.S.-based locations – is given in the Chapter Two Literary Review of this thesis.

Statement of Purpose

The purpose statement of this thesis was that the decision to outsource all or part of any corporation's IT staff positions is of vital strategic importance to the current financial well-being of the company and to its long-term success. As shown by recent shifts in IT personnel placement at GE, reversal of an offshoring trend is time-consuming and expensive. Although GE has a long history of outsourcing IT functions – most of which was done offshore – recent action indicates a strategy shift in favor of in-house employment of IT staff. As of 2011, “GE employs 9,600 IT professionals in 40 countries around the world, according to Deia Campanelli, global communications leader for GE-IT” (Overby, 2011). The company has announced 1,100 new internal IT positions in the U.S., representing an 11% increase in internal IT employment. The purpose of this study was to provide, as a needed logical tool, the use of granular criteria by which companies can identify relevant issues that will predict the success or failure of the positioning of IT-related job duties to either offshore and outsourced placement, or in house employment.

Companies such as GE, with sufficient resources to consider overseas outsourcing of labor placement must consider whether the option returns sufficient incentive to do so. “This move shows that their global operations management strategy is changing as wages in the US continue to fall, bringing something closer to parity with low-cost locations such as India” (Overby, 2011). Additionally, companies operating in non-IT-based industries must consider whether the comparative value of performing in-house IT management is the best use of their resources, given internal lack of expertise in the function. External vendors, both domestically and internationally, offer services that range from a single IT-based function to full turn-key solutions. Due to their focus on delivering IT-related services, such companies may offer attractive cost efficiencies that surpass those possible internally.

Conversely, in order to outsource IT functions, companies have found that they have been faced with a loss of control over the internal specifics central to the management of data beyond a point with which they were comfortable. The loss of personnel selection and the ability to maintain a close relationship with strategic resources has inhibited strategic planning necessary to effectively utilize company IT assets (Tiwana & Keil, 2009; Gregory, Beck, & Keil, 2013). Additionally, offsite placement removes executives and managers from proximity to IT operations, limiting their ability to intuitively tell that trouble has occurred until receiving official notice of issues from the vendor.

Nature of the Study

The quantitative research method will be used to research, collect and analyze data in order to address the gap in knowledge indicated by the research question. The research will consist of a survey, delivered to a targeted audience of IT professionals relevant to its content. To increase its distribution, a snowball distribution will be used in which recipients will be asked to forward the survey to colleagues within the IT field. The survey will be constructed, housed and administered anonymously by a third-party web-based survey engine, guaranteeing the protection of user identity and company affiliation.

The use of surveys to determine perceptions present in public opinion is well-documented. Internet survey response rates have, however, typically been lower than more traditional means of contact (Manfreda, Bosniak, Berzelak, Haas, & Vehovar, 2008; Millar & Dillman, 2011). Additionally, studies conducted by comScore have “revealed disturbing behavioral patterns of members of online-survey panels. People who join online-survey panels, comScore has reported, tend to be heavier users of the Internet—two to three times more so—than the average consumer”

(as cited in Millar & Dillman, 2011). This concern works in favor of this research, however, in that respondents desired by the survey were, by definition of their positions, heavy internet users.

The Proposed IT Professionals Survey

The survey used was directed to current IT working professionals. It addressed questions concerning functional roles and the perception of value returned by outsourced staff located offshore. The survey questions are listed in Appendix C. and were approved by Cardinal Stritch University, College of Business faculty.

Hypotheses and Research Questions

Two research questions were examined by this study, relative to the success of current offshore outsourced solutions. The first addresses the need for vendors to return a positive outcome relative to their current practice. The second examines the differences present between individual work teams in order to determine if a need exists to conduct a more granular examination prior to outsourcing to offshore locations.

Research Question #1 and Associated Hypothesis

The first research question examined by this study was, “Is outsourcing to offshore vendors returning a positive quality value return for internal work teams?” The hypothesis associated with this research question can be stated as follows:

H1₀: Offshore outsourcing of generalized, non-granular IT functions yields a positive or neutral value to internal teams.

H1_a: Offshore outsourcing of generalized, non-granular IT functions yields a negative value to internal teams.

This research question used survey instrument results to quantify service delivery performance through perceptions held by those internal workers most closely associated with the IT management demands being serviced. A positive experience is more likely to generate higher scores in service delivery perceptions than a negative experience. Through the use of a Likert-style survey question, closed-end answers were collected and analyzed. A level of “Satisfactory”, placed in the center of the five-point scale, was considered the minimum level of performance acceptable. A significantly lower overall performance score than 3.0 was set as a minimum to indicate a rejection of the null hypothesis (H_{1_0}) and acceptance of the alternative hypothesis (H_{1_a}).

Research Question #2 and Associated Hypothesis

The second research question examined was, “What granular, job role-based factors are most important to internal IT work teams acting as primary consumers of vendor-supplied offshore outsourced labor in predicting successful working relationships in support of their day-to-day IT management tasks”. The hypothesis associated with this research question can be stated as follows:

H2₀: Examination of currently offshored solutions fails to reveal a significant difference in factor delivery efficacy.

H2_a: A granular examination of currently offshored solutions will reveal that some IT job roles have different views of which service factors are being delivered effectively.

It was reasonable to conclude that if differences existed in the perception of service delivery in common factors between different teams, that there would be differences in their service needs as well. The degree of satisfaction reported by members of individual teams should, therefore, have indicated if such differences existed between IT work teams. If significant

differences existed, the null hypothesis (H_{2_0}) could then be rejected, and the alternative hypothesis (H_{2_a}) would then be accepted.

Definitions, Scope, Limitations & Delimitations, & Assumptions

For purposes of clarity, the following terms are used within this study as defined below:

1. *Accented speech*: A performance factor related to the pronunciation of words, concepts and technical communication that is significantly difficult for organization employees to understand due to linguistic differences.
2. *Availability*: A performance factor related to the expectation of responsiveness to requests and the ability to be contacted for information related to ongoing IT management activities.
3. *Communication speed*: A performance factor related to the rate at which non-native English-speakers communicate and impact on dialect-related comprehensibility.
4. *Information Technology (IT)*: Assets and services – to include personnel – necessary for the management of business information.
5. *Internal work teams*: Groups of internally-employed workers responsible for the completion of IT management tasks and meeting organizational demands for IT-related services sourced either internally or through contracted vendors.
6. *IT work teams*: Logical divisions of IT functions that are divided by job duties dependent on software/hardware managed, area of responsibility, and IT management tasks necessary to perform to internal job requirements.
7. *Job performance*: The perception of service delivery quality based on all contributing factors, including convenience, internal workload reduction, and speed of problem resolution.

8. *Level I:* A designation of helpdesk personnel responsible for the taking of problem reports, initial triage and diagnosis of computer-related issues with company-owned IT assets, and the routing of incident tickets to the correct escalation path for further diagnosis and resolution.
9. *Level II:* A designation of technicians implying intermediate skill and responsibility levels related to the diagnosis, testing and resolution problem tickets, and the performance of advanced operational tasks not possible by Level I personnel.
10. *Level III:* A designation of engineering personnel responsible for the end-tier resolution of problems escalated by Level II technicians, design of new solutions, advanced problem resolution involving deep diagnosis, and other tasks requiring advanced knowledge and specialized expertise.
11. *Native language comprehension:* A performance factor related to the ability to understand technical terms and concepts without hindrance caused by native language differences.
12. *Offshoring:* The act of locating personnel – either external or internal to the company – in a location outside of the United States for the purposes of performing essential services necessary for the production or sales of company products or services.
13. *Outsourcing:* The act of contracting an external person or company to perform essential services that would otherwise be performed by an internal employee.
14. *Reliability:* A performance factor related to a subjective perception of predictable behavior to expected IT service delivery performance and successful problem resolution.
15. *Response speed:* A performance factor related to the ability to react to IT-related situations quickly and decisively in a successful manner.

16. *Training quality*: A performance factor related to the apparent technical knowledge level of outsourced or offshored resources and their preparation to deliver required services.

Scope of Study

The scope of this study examined the naturally-occurring job role and duty division present in an average global company's IT department that engages in the practice of offshore outsourcing. The goal was to reach a natural consensus on the division of labor – both by IT function and authority/experience level – in order to determine the value proposition present in either maintaining the position as an internal employee, outsourcing the job role to a local vendor, or locating the job role in an economically-friendly location outside of the U.S. For that purpose, the scope of this study was limited to analysis of global companies with the resources to place employees or contractors internationally.

Limitations of Research

This study was limited to the academic requirements set by the University as to qualifying area of study, content requirements, and time span of study. Research instrument approval was necessary prior to start of data collection. Additionally, the window in which data collection could occur was short, limiting the sample size. Random sampling error could not be excluded as a cause for some findings, therefore limiting their statistical significance.

This study was personally funded and therefore limited to those study participants available to the researcher. While an effort was made to extend the survey invitations beyond personal contacts through snowball distribution, the response rate was limited by respondents' willingness and ability to answer questions. Survey questions used have been designed to be non-specific to any particular company, and relate to the respondents' personal perceptions. In order to promote

honesty in answers, respondents are not asked to identify themselves. This places limitations on any follow up that may become necessary. The study quality will be limited to the honesty of respondents and their answers.

Delimitations of Research

Practicality demanded that a study conducted within a limited time span be sharply focused on a narrow question. This study was focused on the perceptions held by a population consisting of IT professionals and therefore was limited by that choice. Sample size was also limited due to the availability of individuals within that population.

Choices made with respect to analytical method – specifically the quantitative analytical method – made a practical choice to use closed-end questions to avoid the need for interpretation and possible research bias. Responses were limited to defined, scalable choices that could be statistically analyzed using standardized testing methods.

Assumptions

For the purposes of this study, several assumptions were necessary to form a working understanding of a complex industry by people not familiar with its operating norms.

1. IT Departments consist of a collection of information management functions that each performs a related task. Some examples of functions are the Application Development, Solutions and Architecture, and Server Operations functions.
2. IT Departments are further organized into layers of responsibility, typically referred to as job roles such as Level I Technicians, Level II Specialists, and Level III Engineers indicating progressively higher responsibility, skill levels, education and decision-making authority.

3. IT Departments or large IT divisions are a common level at which outsourcing is engaged holistically. Alternatively, it is common for large projects to be outsourced.

Additionally, it was assumed that respondents were truthful in their responses, and answered questions to the best of their ability to do so. It was further assumed that respondents did not use the survey to promote a political cause or agenda. As the sample represents internal employees that work with offshore outsourced vendors, familiarity with vendor performance was assumed. For the purposes of this study, it was assumed that all answers were based on personal experience, and that perceptions were reported accurately. Finally, given the participant population of IT workers, it was assumed that respondents were not confused by the online nature of the survey or the mechanics of choosing their preferred answer.

Relationship of the Issue to People, Planet, and Profit

GE's relationship with a workforce of over 300,000 workers (Hess, 2013; "Fact Sheet, 2014) both full and part time. Approximately 134,000 workers are based in the U.S., with the remainder positioned internationally in 170 countries (Hess, 2013; "Fact Sheet", 2014). The company claims good relationships with trade unions in the U.S., with 13 negotiated contracts over 30 years, covering approximately 15,000 employees ("GE Union", 2014). GE's workforce largely consists of non-union workers in a variety of positions.

GE also utilizes a large percentage (~70%) of outsourcing vendors in IT, though the company is moving away from a percentage goal while bringing integral IT functions in house. The company recently opened an IT center in Michigan with an anticipated workforce of 1,100 workers (Overby, 2011). CEO Jeff Immelt has announced a reversal of GE's trend toward moving the majority of new jobs to India, declaring that placement of jobs overseas for purely financial

cost savings is “yesterday’s model” (Immelt, 2012). This represents a systemic shift from GE’s practice of creating cost efficiencies based on labor market prices and cost of employment.

GE’s stated concern for the welfare of its employees, and its awareness of a lack of control internationally regarding vendor operations and treatment of externally-contracted workers – as evidenced through their creation and adoption of GE’s Supplier Expectations document (GE, 2014) – presents a compelling need for further study in which IT-related job roles can be evaluated for suitability for outsourcing overseas.

Chapter Summary

The goals of this thesis were to develop a measurable understanding of the perceptions held of offshore outsourced service provider performance. This study examined these perceptions – collected by survey – on an overall performance scale as well as individually by department and IT function to determine the opinions held by internal employees based on 10 individual job performance factors.

The problem addressed by this thesis was a gap in knowledge needed to effectively assess the suitability of IT positions and roles at the General Electric Company for offshore placement and outsourcing, with a high enough degree of granularity to accurately predict the maximum probability of a positive return on value. The purpose statement was that although GE has a long history of outsourcing IT functions – most of which was done offshore – recent action indicates a strategy shift in favor of in-house employment of IT staff, thus indicating a need to accurately assess and evaluate positions for reclassification as internally-staffed job roles.

Specific to the research question, the company’s recent shift to hire 1,100 IT-related roles domestically as internal employees rather than outsourcing and offshoring them as per previous

practice provides an opportunity to explore this issue academically. It became clear when developing the proposed methods of data collection for this thesis that the granular classification of IT roles, coupled with current opinion of internal value return measurement is a largely under-explored research topic.

This thesis had very specific applications that are in line with GE's stated sustainability policies. The careful evaluation of job roles for suitability – in the outsource selection equation – was one that is responsible and practical. Per GE's stated goals as regards their vendors and supply chain, identification of reputational risk presented should vendor employees be treated unfairly returns a measurable benefit to the organization. Proper selection – one that protects employees as well as predicts the successful return of value – touches on both the People and Profit values of sustainability, and therefore represents a worthwhile pursuit of knowledge.

CHAPTER TWO: LITERATURE REVIEW

The concept of offshore outsourcing began with the practice of using low-cost labor in overseas economies to perform relatively low-skilled tasks related to manufacturing of products in order to reduce costs. Products manufactured in this way could be shipped to more developed countries and sold at competitive prices. In the early 1990s, information technology (IT) advisors and academics began to advise their clients to utilize the practice of outsourcing to manage their IT operations at a cost savings of 10 to 50 percent (Lacity & Hirschheim, 1993). “In recent years, US manufacturing jobs have declined as corporations looked for cheap labor overseas” (Dossani, 2004). It is, therefore, reasonable to expect that continued opportunities for substantial cost savings will drive continued and expanding use of this practice, absent intervening internal or external need.

This chapter examines expert opinion on the topics of outsourcing and relevant IT trends found in a review of literature available. A combination of sources was used, primarily available from the Cardinal Stritch University Library. The literature review covers the evolution of the concept of employment cost optimization – starting in the early 20th century. The evolution of outsourcing and the commoditization of IT services and the utilization of offshore labor to cut costs are explored. Finally, trends in both directions – offshoring and reshoring – are examined for applicability and the probability of continued existence as a significant practice in the management of IT services.

Outsourcing

The concept of outsourcing employment came about in the 1950's as a reaction to the underlying costs of employee management, the necessity of maintaining sufficient staff to perform needed work, and the economy of scale present in companies specializing in the practice (Handfield, 2006). Prior to 1913, it was thought that little or no research had been undertaken on the quantification of these costs (Bruce, 2005). Magnus Alexander (1870-1932), an economist and GE employment manager, is credited with the first study to examine the costs associated with maintaining employment practices (Bruce, 2005). "Before 1910, American managers rarely viewed excessively high turnover rates such as these as problematic, let alone perceived them to be correlated in any way with employment conditions, policies and practices in their firms" (Alexander, 1917; Bruce, 2005).

Alexander subdivided the employee base of 12 representative companies into categories, designated Group A – E, based on their skill, experience and intelligence; and their use of expensive machinery and tools (Alexander, 1917). Further, Alexander uncovered a quantifiable difference in employment costs dependent on the "skill, experience, and intelligence" of the worker in question and the specialty of the equipment and tools used (Alexander, 1917; Bruce, 2005). This discovery lends a validation of sorts to the concept that granularity is important and significant in evaluating the costs present and the economic opportunity presented in the elimination of those costs through outsourcing.

In the last 25 years, outsourcing has become a viable alternative to the employment, maintenance and support of a fully-functional HR staff due mainly to the advent of the internet (Handfield, 2006). Job roles that were once dependent on a direct connection to internal physical networks became mobile due to the development of internet virtual private networks (VPN) –

providing a measure of security and encryption – and the availability of fast internet connections that became increasingly affordable (Ben-Ameur & Kerivin, 1993; Busschbach, 1998). A VPN is a client-server connection established across a public communications environment allowing an encrypted session to communicate privately, securely, and transparently (Ben-Ameur & Kerivin, 1993; Busschbach, 1998). This combination allowed companies that traditionally specialized in the identification and screening of qualified IT applicants to expand their offerings into the actual provisioning of IT job roles off-site as a service.

Increases in communications speed, reliability of service, and secure encryption protocols have made it possible for outsourcing firms to create a commoditized environment for IT labor (as cited in Cronk & Sharp, 1995; Knorr, 2011). As a result, IT labor has become a product – a type of raw material – that can be purchased by the unit from external vendors (Knorr, 2011). As early as 1992, analyst James Quinn wrote in his book, *Intelligent Enterprise* (1992) that “each activity within a firm’s value chain and within its traditional staff groups must be considered a ‘service’, which can just as easily be purchased externally (as cited in Cronk & Sharp, 1995). A more direct, contemporary definition is provided by Gilbert as: “Outsourcing is the process by which a corporation, a governmental agency or another business entity sub-contracts to a third party – the ‘outsourcer’ – the performance of certain services or the operation of certain equipment required for its internal operations” (Gilbert, 1993, p. 7; Cronk & Sharp, 1995). As companies become more specialized in their core competencies, it is often more efficient to outsource specialty labor, such as that performed in the management of IT assets.

This view was reinforced by Quinn’s 1992 assertion that “to the extent that knowledge about the specific service activity is more important than knowledge about the end product itself, specialized suppliers can produce higher value-added at a lower cost for their service than almost

any integrated company” (as cited in Cronk & Sharp, 1995). Perry, Stott & Smallwood propose that service activities can be broken into four essential units of comparative advantage (UCA) consisting of a core competence (UCA work), value added support work, essential support work, or non-essential work (as cited in Cronk & Sharp, 1995). Each of these work types should be acted upon differently, based on need. This categorization of work types provided a foundation upon which Cronk & Sharp’s 1995 framework was based.

In Lacity & Hirschheim’s 1993 study of public outsourcing, they “concluded that historically most outsourcing decisions had been made to reduce cost (Lacity & Hirschheim, 1993). Their research additionally showed that – as of 1993 – “many senior managers regarded IT as an overhead burden” (as cited in Cronk & Sharp, 1995) predisposing them to the view that outsourcing IT job roles provided a means by which IT costs could be reduced. In their research, Lacity and Hirschheim refute the claim that cost efficiencies gained through outsourcing datacenter operations – and the costs associated with maintenance of large data centers and personnel – are eroded by pricing policies charged by hardware and software vendors (as cited in Cronk & Sharp, 1995) to such a level as to remove them from cost consideration. Lacity and Hirschheim conclude that “the problems and risks inherent in outsourcing IT tend to outweigh the negligible cost advantages” (as cited in Cronk & Sharp, 1995). In fact, in a separate article, Lacity and Hirschheim assert that “outsourcing successes (primarily at Kodak, but also at American Bankshares, Southeast, and Continental) have prompted many executives to outsource without due consideration of the potential consequences” (Lacity & Hirschheim, 1993).

Ravi Kalakota and Marcia Robinson of E-Business strategies write in a 2005 article for Sterling Hoffman about the advantages provided by offshore outsourcing. Offshore outsourcing – or simply offshoring – became GE’s model:

General Electric (GE) chief executive Jack Welch declared that: '70-70-70' would be his company's rule for sending technology work offsite: 70% would be done by outside suppliers, 70% of that overseas, and 70% of that in India. Welch's vision was to recreate the company using Indian resources. Today, GE is considered by many to be the most advanced practitioner of the offshore outsourcing business model (Kalakota & Robinson, 2005).

Kalakota and Robinson point additionally to Accenture, EDS and IBM as examples of the global delivery model in which resources and engagements are positioned across multiple global locations allowing the service provider to respond to client requirements around the world, utilizing low-cost delivery centers in India, the Philippines, or other economically-friendly countries. Vendors such as Accenture can distribute and manage their engagements across multiple global locations at a lower rate without increased risk (Kalakota & Robinson, 2005). This allows a more fluid delivery and response to changes in client needs without the need for the client to support a large IT staff.

As the trend toward outsourcing – especially in offshore labor markets – increased during the first decade of the 2000s, the offshore labor market continued to expand. “The outsourcing market reported to be US\$ 120 billion in 2002, \$177 billion in 2003, and estimated to be over \$236 billion in 2007” (Wang & Yang, 2007; Gulla & Gupta, 2009). A challenging economic climate in the latter half of the decade provided motivation to cut expenses wherever possible; the perception of offshoring as a less expensive alternative provided an attractive option for the reduction of costs without losing functionality.

The concept of outsourcing has gradually become less-defined over time, as common usage transformed the concept to mean anything from the transfer of all IT-related assets and operations

to a third-party contracted to perform the duties in place of internal staff (Handfield, 2006), to a partial contracting of staff to fill positions once occupied by internal staff (Knorr, 2011). Adding to confusion caused by this vague definition was the lack of defined, methodical practices in the selection of appropriate services to outsource (Pozin, 2014). “While there is a clear consensus in the literature on the importance of outsourcing decision and some guidance on the factors that should be considered such as cost analysis, supplier influences, changes in efficiency and effectiveness, core competency, and other strategic perspectives, there are a few practical accounts of a methodical approach to the outsourcing process” (Gulla & Gupta, 2009). While the empirical evidence shows that such factors are important, little research has been done to quantify or compare each consideration’s importance for the purposes of considering any sort of modular approach to selective outsourcing.

A study, conducted by Umesh Gulla and MP Gupta (2009), of Indian banks revealed several important factors in the outsourcing decision-making process:

- IS strategic alignment which is governed by
 - Business strategic orientation
 - IS strategic orientation
- IS outsourcing degree (low, selective and high)
- Impact of IS outsourcing (short, medium, and long-term)
- IS outsourcing drivers

This study applied the Analytical Hierarchy Process (AHP), “developed at the Wharton School of Business by Thomas Saaty” (Gulla & Gupta, 2009) in an attempt to derive the best results from a combination of three levels of outsourcing density – high, selective, and low –

reflecting company positions outsourced in relation to the in-house IT employee headcount, over a short-, medium, and long-term timespan.

The results of this study revealed that the best alternative in the selection of scope for Indian banks over time was to outsource at a high level, with the greatest value addition over a medium timespan (Gulla & Gupta, 2009). The authors note that “Care needs to be taken while implementing an outsourcing decision. There are risks involved in outsourcing the information systems referred to as IS outsourcing barriers, which could discourage outsourcing of these IS services” (Gulla & Gupta, 2009), including overdependence on a vendor – otherwise known as vendor captivity – security of business plans and strategy, high operating costs, and loss of internal IT competence over time (Gulla & Gupta, 2009). The authors conclude that although high IS outsourcing provides the best alternative, they admit that increased commitment to outsourcing creates greater exposure to risk factors noted.

Perhaps the most significant factor in offshore placement of outsourced job roles was the determination of risk. “As worldwide competition exerts increasing pressure on the IS function of firms to become geographically unbundled, and IS services are dispersed among increasingly distant and unfamiliar locations, the issue of risk emerges as a significant factor in decisions about where to locate offshore facilities” (Hahn, Doh, & Bunyaratavej, 2009). According to a 2009 study completed by Eugene Hahn, Jonathan Doh, and Kraiwinee Bunyaratavej, companies are responding to environmental and competitive push factors by accepting progressively greater host country risk.

According to Hahn, et al., their study shows “firm-level and environment-level learning leads to firms’ increasing tolerance of riskier locations for IS offshoring” (Hahn, et al., 2009). Firm level learning occurs as companies accept a level of risk and find the results – and cost

savings – justified, and use these results to justify the acceptance of greater levels of locational risk as a result. The authors assert that while they “have found that learning leads to pursuit of increased risk, it is still unknown whether such factors lead to appropriate pursuit of risk such that the odds of success are increased” (Hahn , et al., 2009).

As the trend to outsource offshore continues, international outsourcing firms have experienced pressure to offer competitive prices. Given that advances in communications technology have outpaced infrastructure in some countries – particularly those with attractive labor pricing – a certain amount of risk has evolved. “Many manufacturing executives now recognize, however, that quality problems, longer supply chains, lack of visibility, piracy and intellectual capital theft, are also part of the offshoring operation, meaning that not all of the 25 to 40 percent [estimated] off-shore sourcing savings goes to their bottom line” (Ferreira & Prokopets, 2009). It is possible that as risk accumulates, the cost advantage provided by lower costs of labor will be eroded.

As risk accumulates, alternatives to offshore outsourcing are being examined. A *BusinessWeek* article by Pete Engardio notes that “the economics of global trade are starting to tilt back in favor of the U.S. to a degree unseen in a generation” (as cited in Ferreira & Prokopets, 2009). The authors add that decisions to bring work back to the U.S., or even back in-house, involve prudent consideration of “barriers to re-establishing sourced or production capabilities on-shore or near-shore” (Ferreira & Prokopets, 2009). Companies seeking to move operations back once offshored may need to assess their internal operational capabilities – “are those capabilities intact, or have they been outsourced and supporting assets and skill sets lost? Can the capabilities be re-established here, by whom, and how soon” (Ferreira & Prokopets, 2009)? Once offshored, a

degradation of internal capacities was inevitable to some extent as job skills are lost when employees move to other opportunities.

According to Stan Malos, efficient use of offshoring involves more than just consideration of a product offering by an overseas outsourcer. “While cost savings continue to play the major role for most companies, both quality and availability of worker skills and administrative and regulatory contexts of labor markets have increasingly influenced global staffing decision processes” (Melos, 2010). Advantages of cost savings possible with offshore outsourcing must be weighed against factors that may present a hidden downside.

Cost containment – especially in labor markets – presents a powerful incentive to consider offshoring as an alternative. Recent improvements in quality of service and reliability of infrastructure provide additional motivation. “While companies typically focus on reduced offshore labor costs, it is possible to overlook hidden downsides related to communication and supply chain inefficiencies, host country political or regulatory dynamics, recruitment, training, and retention issues in the destination country, cultural differences in workforce attitudes, or labor displacement costs at home” (as cited in Melos, 2010). Impact on company reputation – caused by negative publicity surrounding offshoring decisions – or customer dissatisfaction with offshore service centers and helpdesks can erode sales of goods and services. Security concerns – and possible exposure of customer or company confidential information – can cost companies many times labor cost savings (Melos, 2010). Additional hidden costs created by uncertain political climates and unexpected governmental regulation can also add expense.

According to Forrester, “The ability to deliver expected results remains in question for outsourcing service providers” (Martorelli & Benkel, 2015). In their Q1 report, Forrester Research cites a study of 13,822 business and technology decision-makers as viewing cost savings being

lower than expected as their number one biggest challenge, while seeing an inability to deliver projects as specified as second (Martorelli & Benkel, 2015). This highlights the need for consideration of delivery performance and the factors valued on an IT work team level as important considerations to offshore vendor use.

Melos recommends, therefore, an “integrative approach to offshore staffing that considers cost, skills, and infrastructure effects within one’s overall human resource strategy, and to critically examine offshoring alternatives that could help achieve and sustain competitive advantage” (Gupta, et al., 2007; Melos, 2010). Specifically addressing the human component to offshoring, and its contribution to the management of information critical to the development and delivery of needed services and products, Melos recommends that businesses consider developing a portfolio of offshore options as potential sources of sustainable competitive advantage beyond those established offshore locations that hold current competitive advantage, in favor of a more strategic, long-term view that encompasses an improved human capital supply and favorable business climate.

In a 2010 article published in the *Journal of Product Innovation Management*, Subroto Roy and K. Sivajumar posit that one of the major risk factors in offshore outsourcing is the security and defense of intellectual property (IP). “In the global economy, IP must be managed for the outsourcer, the provider, and their relationship in the context of different IP protection regimes, legal infrastructures, differences in employment contracts, and knowledge flows (Roy & Sivakumar, 2011). IP exists at a high level on the value chain, and as such, requires careful protection.

The access, exploitation, and defense of IP is critical to protect substantial company investment and competitive advantage. Globalization of IP presents major challenges to security

as it introduces multiple tiers of physical, practical and legal access requirements that are variable dependent on location and timing. Roy & Sivakumar introduce an equation that posits that independent variables of trust and verification contribute to a client company's ability to use intellectual property (IP) to generate innovation (Roy & Sivakumar, 2011). The trust factor, built incrementally based on client-vendor interactions and stability of predicted response, allows clients to depend on vendors to support their goals and interests.

Roy and Sivakumar assert that the buyer-seller relationship – and the management of the client's (buyer) IP are critically linked. They further posit that decisions regarding global outsourcing of knowledge-based services must not be based solely on “short-term operational considerations, but rather from the overall context of organizational performance, including the vital aspects of accessing, exploiting, and defending IP for innovation generation” (Roy & Sivakumar, 2011). Further, the crossing of borders introduces a legal environment that combines the laws of the U.S. with those of other jurisdictions that may make the defense and security of IP more difficult.

In parallel with the management of IP, customer relationship management (CRM) in an offshore outsourced environment presents additional difficulties if not aggressively managed. “An important decision in regard to the organization of CRM is whether specific CRM-related activities should be performed in-house or outsourced” (Kalaiganam & Varadarajan, 2012). As cost considerations initially drove many companies to investigate offshore alternatives, quality of service – a competitive factor to price consideration – materialized as a consequence. “A number of recent studies pertaining to the size of the market for information technology (IT) services, business process outsourcing (BPO) and CRM software are indicative of their growing importance and the need for research in the area” (Kalaiganam & Varadarajan, 2012), highlighting the

different implications in supply-side – or cost structure – factors with those present in the demand-side – or customer-facing – environment.

Kalaignanam & Varadarajan point out that make versus buy decisions – or the decision to outsource as it relates to CRM – have consequences beyond that implied by simple cost considerations. Citing Porter’s Five Forces model, “increased outsourcing poses the risk of eroding the differentiation advantages that a business might strive to accrue, as a consequence of the greater likelihood of homogenization of skills and resources” (Kalaignanam & Varadarajan, 2012). The emergence of a fast and reliable global communications network has effectively made competition among service-based companies – including IT service centers - possible across much greater distance, effectively erasing borders to geographical competition.

The initial pull of cost savings as a motivational factor is often denied by companies participating in the practice of offshoring, but there is substantial evidence that it is a large contributor to the decision-making process. Thurm & Linebaugh (2013) present, in a Wall Street Journal analysis of 60 major U.S. companies, a practice of profit-parking offshore driven by current U.S. tax laws. The authors found that across 60 of the largest U.S. companies, over \$166 billion was held offshore. “The practice is a result of U.S. tax rules that create incentives for companies to maximize the earnings, and holdings, of foreign subsidiaries. The law generally allows companies to not record or pay taxes on profits earned by overseas subsidiaries if the money isn't brought back to the U.S.” (Thurm & Linebaugh, 2013). If invested in overseas operations, little or no taxes are collected by the U.S.

Exemplifying the process, Abbot Laboratories recorded a gain of \$8.1 billion in funds held overseas, during a year in which their net income totaled only \$6.1 billion. (Thurm & Linebaugh, 2013). Given current tax implications, motivation to increase offshore placement of IT resources –

at an additional cost savings over similarly-trained U.S. operations – holds a power cost incentive. In addition to the loss of jobs to overseas outsourcing, the lost revenue in deferred taxation amounts to \$42 billion during 2013 (Thurm & Linebaugh, 2013). This raises the possibility that political pressure within the U.S. may cause these tax laws to be altered in the future.

IT Trends

A number of IT trends are apparent given recent advances in technology and communication. Increasing communication speeds, increased mobility, and the expansion of cellular and infrastructure-based networks indicate that IT is trending towards greater future flexibility (Gilstrap, 2012). Accompanying this flexibility is increased accessibility to anywhere computing. The clear trend in mobility argues favorably for increased access to a more competitive labor market, and increased use of offshore outsourcing (Overby, 2014). Arguing against this outcome, however, are multiple concerns over the security and protection of intellectual property and information technology assets (Lacity & Hirschheim, 1993; Cronk & Sharp, 1995; Gulla & Gupta, 2009).

In a study conducted at the University of Melbourne, Australia, Vijayalayan, Harwood, and Karunasekera describe a Wireless Mesh Network (WMN) in which network devices seek out and self-configure communication peers in order to cover large areas of potentially-unfriendly terrain (Vijayalayan, Harwood, & Karunasekera, 2013) Barbara Elmore, writing for the Baylor Business Review, envisions “a globe chock full of mobile devices, where almost everyone is connected to home, or work, or a leisure pursuit, no matter the place or the time of day” (Elmore, 2013). The authors each presented very different network technologies, but both were viable using technology in place today, and their common theme was mobility.

Increased mobility is important to one of the emergent trends in IT – the practice of Home-shoring or working from home. In a 2006 article for *Employee Benefit News*, Kelley Butler describes the emergence of the home office as a daily workplace in the form of call-center or helpdesk workers. Citing companies such as J. Crew, Office Depot, 1-800-FLOWERS, and others, home workers numbered over 112,000 in 2006 (Butler, 2006). According to Kenneth Rapoza of Forbes Magazine, that number has risen to over 30,000,000, or one in five Americans that work from home at least once per week (Rapoza, 2013). The ability to work from home brings with it an increased availability to be available to work – regardless of the time or location in which employee finds themselves. Companies find advantage in the ability to access employees – and the knowledge, experience, and skills they possess – from the office, home or anywhere else. Employees gain the ability to leave the office for convenience or need, while still remaining available to accomplish work goals.

Another emerging trend runs counter to the decades-old practice of offshoring – Reshoring. Faced with economic risks present in an environment outside of U.S. legal controls and protections, some companies that have offshored operations – especially those related to the management and protection of a company’s information assets – are considering bringing them back to the U.S. According to an article by Peter Navarro, operations offshored to China face possible issues not foreseen in the rush to capitalize on a huge pool of cheap labor. Economic risks in outsourcing to China include outright piracy, counterfeiting, and the forced transfer of sophisticated technology to potential Chinese competitors (Navarro, 2013). Additionally, relations between China and America are unstable, presenting the possibility of nationalization of assets or compromise of trade secrets and competitive advantage, presenting a compelling case for reshoring China-based operations to American-based companies.

Offshoring as an IT trend requires careful consideration with regard to controlling projects and relationships with vendors located in the host country. A wealth of research is available on the specific controls used in the client-vendor relationship (Tiwana & Keil, 2009; Gregory, Beck, & Keil, 2013). “In order for organizations, including temporary organizations such as projects, to achieve their objectives, some type of strategy must be implemented that “effectively controls members’ activities in a manner functional for the organization” (as cited in Gregory, Beck & Keil, 2013). The variety of control mechanisms that are cited in Tiwana & Keil,(2009) and Gregory, Beck & Keil (2013), emphasize the difficulties in establishing effective control mechanisms over distance and across legal domains.

Regarding the process of project selection for outsource candidacy, Cheifetz (2003) recommends that Warren Buffet’s investment principles be applied. These five principles follow a common-sense approach to the selection of viable outsourcing and offshoring projects or functions. First, “Outsource only functions whose processes you understand. Outsourcers do something you can do, only more efficiently, because of a special focus or economies of scale” (Cheifetz, 2003). When selecting a function or project, it is imperative that a firm has employee expertise internally in order to effectively oversee and control vendor operations. Second, measure the cost of performing the function or project in-house prior to deciding on outsourcing in order to ensure an effective value return. Third, change – in and of itself – is not a reason to outsource. “If you are going to outsource based on cost efficiencies, there should be substantial savings involved — along with a sizable margin of error as a hedge against the unexpected” (Cheifetz, 2003). Fourth, outsourcing should be done strategically, based on a market-driven reason – such as globalization or other need. Maintaining control over operations – as mentioned earlier in Tiwana and Keil (2009) and Gregory, et al., (2013) – is essential, but can be challenging in an international

environment with varying political and legal climates. Finally, Buffet's fifth principle is to bet on your people. "Make sure you have sophisticated executives planning and negotiating your outsourcing agreements" (Cheifetz, 2003). Outsourcers are in business to make a profit, and changes, additions and moves come with charges attached.

Literature Gap

Literature reviewed mentioned the need for several different factors to be examined in the decision to outsource to offshore vendors, but most of the experts listed such consideration at the holistic or per-company level (Cronk & Sharp, 1995; Butler, 2006; Roy & Sivakumar, 2011; Kalaignanam & Varadarajan, 2012). In fact, of the expert opinion reviewed for this thesis, only Cheifetz (2003) mentioned an analysis by function. This study hypothesized that differences in IT management job roles exist – along with associated differences in service delivery needs expected from external offshored vendors. These differences explain a need for exploration of more granular analysis to increase organizational understanding of job role demands and the suitability of each role for offshore outsourcing.

During the review of literature available on the topic of granular assessment of job roles for offshore outsourcing viability, it was found that a great deal of information was available regarding the concept and adaptation of outsourcing offshore as a business strategy (Gupta, et al., 2007; Melos, 2010), and the trends in information technology (IT) that applied to this practice (Gilstrap, 2012). Several well-established frameworks were shown to be of best-practice status with regard to the selection of both project level and departmental units for outsourcing, both domestically and abroad (Cronk & Sharp, 1995). Very little research literature was available, however, regarding the subdivision and stratification of IT job roles prevalent within common usage. Further, a gap

exists in the identification criteria for selecting outsourcing candidates for international placement on a granular level. It was in this area that further research – through survey and analysis of extant data – was warranted in this thesis.

Chapter Summary

This chapter has covered the evolution and current expert thought available on the topic of outsourcing, both abroad and domestically. Originating with the Alexander's seminal work on the calculation of employment costs (Alexander, 1917), the evolution of the practice of offshoring came about as communication speeds increased (Ben-Ameur & Kerivin, 1993; Busschbach, 1998), and many IT services were commoditized (as cited in Cronk & Sharp, 1995; Knorr, 2011). The major motivation for this movement was shown to be cost initially (Lacity & Hirschheim, 1993; Cronk & Sharp, 1995). Beginning in the early 1980's, GE became a pioneer of the practice, moving toward a 70 percent outsourced profile (Kalakota & Robinson, 2005; Khatri, 2004). In recent years, a number of risk factors have developed leading some to question the viability of wholesale outsourcing with cost as the sole motivation (Lacity & Hirschheim, 1993; Immelt, 2012; Martorelli & Benkel, 2015).

This chapter also covered the topic of IT Trends. With advances in communications, it was apparent that networks are becoming more flexible (Gilstrap, 2012). Mobile computing is becoming more evident, as is the ability to locate workers globally (Overby, 2014). Massive increases in network availability have led one in five Americans to work from home at least one day per week (Rapoza, 2013). Additionally, increased risk present in some offshore locations (Navarro, 2013) presents compelling reasons for a reversal of trends to re-shoring workers.

Experts recommend that increased control be contractually guaranteed in order to safeguard IT assets and organization options (Gregory, Beck, & Keil, 2013).

Finally, this chapter discussed a gap found in current knowledge regarding the practice of outsourcing at the departmental or project level. Almost no information was available regarding the practice at the functional job role level. With the sole exception of Cheifetz (2003), no mention was made of a functional examination at all. The lack of academic study on the value of a granular examination reveals a gap in knowledge, presenting an opportunity for this research study.

CHAPTER THREE: METHOD

Chapter Three defined the research design and methodology used to collect and analyze data required to calculate the dependent variables used by the study preparatory to their interpretation in the next chapter. In this chapter the research method is defined and validated, as is the appropriateness of the study design along with any advantages or disadvantages to the chosen approach. Independent and dependent variables needed for the study are defined and their source identified.

Also in this chapter, the research question is formally restated, as is the working hypotheses that was explored by this study. Statistical information – such as the population and sample have been defined, as well as the design and validity of the research instrument used to collect data. Assurances of data confidentiality and anonymity have been provided and explained, along with anticipated ethical concerns on the part of potential respondents. The data collection process is explained, and finally the analytical processing of respondent data is covered, along with the statistical means by which data is interpreted.

Research Method & Design Appropriateness

During consideration of the question of using quantitative versus qualitative research to collect and evaluate information relative to the gap being studied, there were a number of factors that argue in favor of the use of the quantitative methodologies (Creswell, 2014). First, a limited number of strategic options were viable, limiting theoretical choices. Companies can choose to outsource specific job roles, an entire department or a project as a unit. “In quantitative studies, one uses theory deductively and places it toward the beginning of the proposed study” (Creswell, 2014). Given the knowledge available, and the limited choices a company can make, quantitative

analysis was indicated. Additional support arguing for the use of the quantitative method over qualitative was its suitability for measuring rankings or scores obtained by surveys. Finally, According to the National Science Foundation, “Data collected through quantitative methods are often believed to yield more objective and accurate information because they were collected using standardized methods, can be replicated, and, unlike qualitative data, can be analyzed using sophisticated statistical techniques” (National Science Foundation, 2002). As the data fits within these parameters, quantitative research was deemed most appropriate.

More specifically, the type of quantitative research design that was used is characterized as correlational analysis. This non experimental form of quantitative research uses the correlational statistic to describe and measure the degree or association (or relationship) between two or more variables or sets of scores” (Creswell, 2014). As the proposed research included survey questions that asked respondents to order or rank items relevant factors judged in their opinion to be desirable or injurious to the efficiency of their work teams, or to identify the strength of trends, based on their professional experience and observations, the research instrument methodology fit well within this purpose.

Data was collected via the use of a survey directed at a professional audience of IT workers. The survey was directed at IT professionals that form the work teams dependent on the services provided by outsourced workers – essentially the primary consumers of the vendor’s services. Services outsourced are typically outside the core focus of the company (Gilbert, 1993; Cronk & Sharp, 1995) but are nonetheless essential to the operation of the organization. As this thesis examined the needs of the primary consumer, it was appropriate acquire this information as directly and as honestly as possible.

Surveys were an ideal vehicle for anonymous data collection. “Internet surveys are quickly becoming the preferred method of delivery for self-administered surveys” (Albaum, Wiley, Roster, & Smith, 2011). Surveys are inherently a quantitative methodology (Olsen, 2004) and therefore fit well within a quantitative study. Additionally, the use of internet surveys offered speed, potentially-increased respondent pool size, and anonymity not possible in most other methods.

Method Advantages & Disadvantages

The primary advantage of quantitative research was that it lent itself well to data that can be broken down into numeric scales (Bryman, 2006; Creswell, 2014; Madrigal & McClain, 2012). The method fit well within the description of the data to be collected and analyzed. The results can then be analyzed through use of the Likert Scale and appropriate quantitative statistical analyses. Quantitative research statistically measures data and renders it in a form that can be easily translated into quantifiable data charts and graphs (Bryman, 2006; Madrigal & McClain, 2012). Statistical analysis can identify trends and patterns in data contrary to public thought or not readily visible.

The primary disadvantage of quantitative analyses was their dependence on large data pools to increase accuracy. Response rates and time constraints limited the study’s eventual data return. Additionally, there was an implied reliance of statistical significance to eliminate or reduce the possibility of sampling error. If a study was underpowered due to a small sample size, it may fail to achieve statistical significance even if the finding is accurate. “On the other hand, if you achieve statistical significance with a small sample size, you don’t need to increase your sample size; the finding is true regardless” (Madrigal & McClain, 2012).

Another characteristic of quantitative research is its reliance on data standardization. This attribute was both an advantage and disadvantage, dependent on the data gathered. Qualitative research required an observer to “observe and document behaviors, opinions, patterns, needs, pain points, and other types of information without yet fully understanding what data will be meaningful” (Madrigal & McClain, 2012). Quantitative research was able to be accurately targeted prior to collection, and required no interpretation or trend analysis during its collection.

Independent and Dependent Variables

This study related the dependent variable of factor importance – and its impact on the needs of the dependent IT work team and their ability to perform essential IT management tasks – to the independent variable data consisting of the statistical means of each factor as indicated by survey respondents. Questions were organized to elicit responses that were then grouped to indicate specific preferences and overall impressions of vendor performance. The dependent and independent variables were listed in the table below:

Table 1: Independent and Dependent Study Variables Used

Independent and Dependent Variables

<u>Variable</u>	<u>DV / IV</u>	<u>Purpose</u>	<u>Source</u>
Offshoring by Department	IV	Identifies offshoring experience within company & department	IT Survey
Overall Job Performance	IV	Identifies value perceived by company & department	IT Survey
Observed Factor Importance	IV	Identifies performance in 10 areas of service delivery	IT Survey
Observed Service Delivery by IT work team	IV	Identifies opinion of offshoring service delivery per IT work team	IT Survey

Independent and Dependent Variables

<u>Variable</u>	<u>DV / IV</u>	<u>Purpose</u>	<u>Source</u>
Respondent Role	DV	Calculated from Respondent department, Respondent Job Level, Education Requirements, and Experience Needed to determine degree of qualification	Calculated
Relevance	DV	Calculated from Offshoring by Department to determine personal experience (Quality Check)	Calculated
Qualified QOS	DV	Calculated as Quality of Service Perception filtered by Relevance	Calculated
Calculated Service Delivery Performance Rating	DV	Calculated using values from Respondent Role, Observed Factor Importance, and Qualified QOS.	Calculated

Research Questions & Hypotheses

Two research questions were examined by this study, relative to the success of current offshore outsourced solutions. The first addresses the need for vendors to return a positive outcome relative to their current practice. The second examines the differences present between individual work teams in order to determine if a need exists to conduct a more granular examination prior to outsourcing to offshore locations.

Research Question and H1: Overall Value Returned

The first research question examined by this study was, “Is outsourcing to offshore vendors returning a positive quality value return for internal work teams?” Presently, there is little guidance available to companies considering the use of offshore vendors. Relying on vendor promises of effective performance may not be practical due to delays outside the outsourcing vendor’s control, failures to devote sufficient or properly trained resources, or vendor financial viability (Benvenuto, 2005). This study examined the concept of actual service delivery

performance as measured by the primary consumers of contracted services – the internal work teams responsible for the satisfaction of organization demand for IT management services.

The hypothesis associated with this research question can be stated as follows:

H1₀: Offshore outsourcing of generalized, non-granular IT functions yields a positive or neutral value to internal teams.

H1_a: Offshore outsourcing of generalized, non-granular IT functions yields a negative value to internal teams.

Survey questions were designed using a Likert-style scale, with the following rankings:

1 = Very Bad / Significant negative impact.

2 = Poor

3 = Satisfactory

4 = Good

5 = Very Good / No negative impact

A rating of 3 or above was used to indicate a general satisfaction with services delivered overall. A rating of less than 3 was assumed to indicate that services have been observed that are less than satisfactory. Through the use of a Likert-style survey question, closed-end answers were collected and analyzed. A rank of “Satisfactory”, placed in the center of the five-point scale, was considered the minimum level of performance acceptable. A statistically significant lower overall performance score of less than 3.0 was set as a minimum to indicate a rejection of the null hypothesis (H1₀) and acceptance of the alternative hypothesis (H1_a). A *t* test was used to quantify the sample variance and statistical significance present for reporting purposes.

Research Question and H2: Work Team Differences Present

The second research question examined by this study was, “What granular, job role-based factors are most important to internal IT work teams acting as primary consumers of vendor-supplied offshore outsourced labor in predicting successful working relationships in support of their day-to-day IT management tasks?”. The hypothesis associated with this research question was stated as follows:

H2₀: Examination of currently offshored solutions failed to reveal a significant difference in factor delivery efficacy.

H2_a: A granular examination of currently offshored solutions revealed that some IT job roles have different views of which service factors are being delivered effectively.

Logically, differences found between the assessments given by members of different groups related to the same service delivery factors would indicate their expectations of service delivery could be considered different as well. As ratings given migrated away from a satisfactory rating – in either direction – an indication of stronger opinion would reflect a higher impact (Friedman & Amoo, 1999). If such differences were found at a statistically significant level, the null hypothesis (H2₀) could then be rejected, and the alternative hypothesis (H2_a) be accepted.

IT departments encompass many sub-functions that may adapt to remote placement with varying degrees of success (Cheifetz, 2003). These differences were based on the level of experience, training and human resource deployment policies of the vendor, as well as the expertise, understanding, and experiences in the given functional area of the activity (Dhar & Balakrishnan, 2006). This research question hypothesized that in order to improve the use of external offshore vendors, each job role and level should be examined to determine its specific expectations and the likelihood of meeting the needs of work teams dependent upon them. The

elements of each job role, and their importance in the performance of that role's job duties – can be described for the purposes of this study as factor importance.

Hypothesis H2 implied that a granular examination of job roles within a system would logically lead to an overall improved understanding at a detailed level. Improved understanding – at a granular level – may uncover role incompatibilities with placement, or unanticipated issues that must be addressed. Using a properly-constructed set of factors, with appropriate weighting applied, would therefore anticipate varying degrees of success specific to the job role being examined.

Population

The target population examined in this study consisted of potentially all U.S.-based IT professionals working in companies that either used or may have used global offshore outsourcing in order to service internal information technology management demands. “A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics” (Hassan, 2015). The Institute of Electrical and Electronic Engineers (IEEE) estimated that in 2013, there were 1.9 million IT workers employed in the United States (Charette, 2013). These users represented the primary consumers of the offshore vendor-provided IT services. These employees also provided feedback to IT management and senior executives regarding offshore vendor performance.

Sample

In statistical analysis, when analyzing a population larger than would be practical to examine through direct examination, a sample is used. “A sample is any subset of a population, so its size can be small or large. We want a sample small enough to be manageable by our computing

power, yet large enough to give us statistically significant results” (Taylor, 2014). Given the time and funding constraints inherent with the academic nature of this study, the sampling strategy was a random sampling of IT professionals available to the researcher and chosen through a snowball distribution with set requirements of IT professional association with recipients.

The first source of sample members was taken from a pool of participants in the LinkedIn.com online community which allows professionals in various industries to communicate with each other. The website offered industry groups to which individuals could subscribe and post messages on industry-related message boards (LinkedIn.com, 2015). The survey invitation was posted to two such professional group forums; the Citrix IT Professionals and Active Directory groups. Participants were asked to forward the survey invitation to associates with whom they worked professionally in IT industry roles.

A second source of participants was drawn from industry contacts known personally by the researcher. A total of 67 industry professionals were invited by email to participate in the survey and to assist in its distribution. The third source of survey recipients was developed using the snowball method of distribution. “The snowball technique is a method that yields a sample based on referrals made by people who share or know others who present the characteristics that are of research interest” (Lopes, Rodrigues, & Sichieri, 1996).

Informed Consent, Confidentiality, and Ethical Concerns

In both cases, participants were assured that no personally-identifiable information would be recorded or maintained. In both cases, results were limited to 100 respondents across all sources, though many more than 100 were recruited. Using this methodology, identity information

could not be inferred as the researcher had no knowledge of which respondents replied or which were unable due to personal choice or survey limitations.

Regardless of assurances of honest intent, some hesitancy was anticipated due to recipient concerns of privacy and security. Employees are often discouraged from participation in industry surveys by company policies that provide for severe penalties in the event of even accidental disclosure of proprietary information. To that end, in addition to anonymity, questions were designed to avoid any collection of company or individual identity-related information.

Additionally, the anonymity of the internet has promulgated a society that distrusts any request for assistance from the internet. Over the past two decades, the internet in general and social media in particular, has become inundated with fraudulent requests and potential security risks. Because those fears are well-founded, they limited the willingness of many potential respondents to participate in an anonymous survey. Though careful wording and assurances of anonymity may have lessened concerns, there were many recipients that did not respond.

Research Instrument

While several sources of data existed allowing the examination of IT industry practices, a need for specific information limited the selection of a research instrument. Interviews, public records and surveys were considered as appropriate sources of IT-related demographic information. “Public-use micro data from national censuses provide representative information, but only for a very limited set of variables” (McKenzie & Mistiaen, 2009). Interviews were deemed incapable of being conducted with enough representation to accurately model the research question of this thesis. Surveys containing purpose-written, closed-end questions, however, were found to be well-suited for the task.

A survey was designed, using an online, web-based tool – SurveyMonkey.com. The survey was designed to address the independent and dependent variable described earlier through a distribution referred to as a snowball model, in which respondents were encouraged to forward the survey on to friends and colleagues that were within the targeted population (Lopes, Rodrigues, & Sichieri, 1996). Surveys were accessed by web address, and invitations were sent out by targeted email and social media.

Validity

It should be noted that web-based surveys had several limitations that impacted data validity. Surveys use self-reported data and are subject to respondent bias and prejudice producing error in objective data. “For questions about events and behaviors, error can be thought of as the difference between the report of a respondent and that of an omniscient observer” (Schaeffer & Presser, 2003). Schaeffer & Presser asserted, however, that this standard did not apply to measures of subjective phenomena (2003). This survey problem had limited impact on this data collection due to the perceptive nature of the requested data.

Respondents were asked for their perceptions of offshoring performance and trends, leading to a subjective rather than objective collection of data. Further, great care was taken to insert a feeling of anonymity into the collection process, both through the use of the internet and the confidentiality reassurances of a third party. Societal emphasis on privacy – especially in the U.S. where this survey is taken – further encouraged honesty in anonymity, essential to survey data collection.

Additionally, web-based surveys were subject to internet and email noise – or the phenomenon of recipients receiving so much email that non-essential communications were

deleted wholesale. “Participants many tune out the surveyor base their responses on the visual effect and entertainment value of the instrument” (as cited in Wilson, 2009). Finally, reported response rates were lower than traditional survey methods.

Data Collection

On careful consideration of the above limitations, it was determined that sufficient controls were in place to overcome the potential difficulty presented. The web-based tool – SurveyMonkey was selected on the recommendation of both the academic advisor and several colleagues experienced with using the tool. Its main advantages were its ease of use, anonymity features, and cost. The questionnaire was delivered to recipients primarily through the use of social media as discussed in the earlier Research Instrument Section of this paper.

Data collection was conducted over a four-week period in which recipients were contacted with the initial request to complete the survey within two weeks. An additional note was sent approximately 10 days later to email recipients thanking them for their consideration, and prompting them to complete the survey if they had not already done so. Survey response expected is approximately 50% response for IT professionals given their proximity and integrated use of email during their daily tasks.

Data Analysis

Collected data was analyzed using a stratified approach validated in Six Sigma project management use. Using a subset of the standard DMAIC model, data will be measured and analyzed to produce a layered insight into both accuracy and predictive value. The most commonly-used strategy for the Six Sigma, DMAIC is an acronym for Design-Measure-Analyze-Improve-Control (Bothe, 2010). Two of these stages provided the foundation for the data analysis

phase of this study: Measure and Analyze. The objective of the Measure stage is to collect data or make observations to evaluate the current performance level of the process (Bothe, 2010). This data is then transitioned to the Analyze stage in order to diagnose current process performance and identify which input variables have the greatest impact on process performance (Bothe, 2010). These variables can then be visualized using a Pareto chart (also known as a bar chart) in order to graphically display differences in the data values (Bothe, 2010).

The Measure stage gathered data through the Likert-style collectors presented in the survey instrument questions in order to determine performance levels. A Likert Scale is the sum of responses to several related items ranked on a balanced scale on both sides of a neutral item (Vanek, 2012). The data collected was validated through the use of correlative analysis to determine the relation of individual performance factors to the overall perception of job performance obtained in a separate survey question. Correlation is a statistical technique that can show whether and how strongly pairs of variables are related (Bothe, 2010).

The Analysis stage of the DMAIC strategy, as used in this study, compared the perceptions of actual, observed performance behavior to satisfactory expectations, and statistically quantifies any variation found. The predictive value of data is limited by variation; therefore process variation is one of the major causes of instability (Bothe, 2010). One initial measure of variation is process standard deviation. Standard Deviation (SD) “tells us dispersion of individual observations about the mean. In other words, it characterizes typical distance of an observation from distribution center or middle value. If observations are more disperse, then there will be more variability. Thus, a low SD signifies less variability while high SD indicates more spread out of data” (Barde & Barde, 2012). Stated more simply, higher standard deviations indicate more volatile data that may be less accurate in the prediction of future behavior. This variation can also be tested, as in this

study, by the use of correlative analysis using Pearson's product-moment coefficient (as denoted by r) which "is by far the most common index of the relationship between two variables" (Onwuegbuzie, Daniel, & Leech, 2007).

In the Analysis phase, mean data was graphed onto a Pareto chart to expose elements of factor importance across the entire range of respondents. The visual nature of the chart allows differences to stand out more clearly (Bothe, 2010). This portrayed the collective opinion of IT professionals as indicated by an overall compilation of views to address the first hypothesis regarding quality of services provided by offshore IT service vendors.

Survey question Q8 data measured respondent perception on overall job performance of external vendors. Survey questions Q6 and Q7 measured individual departmental job performance perceptions. A mean was derived from all departmental ratings collectively, and compared to Q8 data to determine response consistency. In order to ensure that Q8 was positively correlated to Q6 and Q7, a correlative analysis was conducted as referenced above. Once correlation was established, the mean of both data sets was combined to present a true picture of overall satisfaction ratings. These ratings were graphed onto a Pareto chart for graphical data presentation of results (Bothe, 2010; Bonacorsi, 2015). A t test was then used to quantify variation present and determine if the means differ significantly from expected norms. "It [the t test] is applied to compare whether the average difference between two groups is really significant or if it is due instead to random chance" (Chew, 2014).

Individual IT work team results, derived from respondents with direct personal experience with the departments in question, will then be compared with each other, and with the collective baseline to determine variation from expectations. "When we are faced with multiple factors, the ANOVA procedure affords us a technique to test the significance of each factor and each possible

interaction of factors” (Mayo & Conerly, 1999). The use of an ANOVA test in this case is appropriate as we had multiple variables, in which we were interested in variation present among different factors (represented in rows of data) and between groups (represented in columns of data). The ANOVA test will measure variation present and presented both an F to:F critical and an alpha to p -value comparison to confirm the significance of results. “When we are faced with multiple factors, the ANOVA procedure affords us a technique to test the significance of each factor and each possible interaction of factors in the fixed-effects case” (Mayo & Connerly, 1999). A significance level was set at ($\alpha = .05$) will be used to represent a minimum confidence level of 95% probability of avoiding a Type I error.

The ordinal nature of some individual survey responses also presents a challenge to the interpretation of Likert Scalar Data. Ordinal data is “Data in which an ordering or ranking of responses is possible but no measure of distance is possible” (Allen & Seaman, 2007). “Likert scales are a common ratings format for surveys. Respondents rank quality from high to low or best to worst using five or seven levels” (Allen & Seaman, 2007). Ideal for interval data – or that which can be represented by numeric data in scale to its meaning – Likert scales representing ordinal data imply scale where no exact measure exists. This is seen in the response to questions such as Question 7 of the IT Professionals Survey used by this thesis. The question asks respondents to “Please indicate your opinion of the quality of service provided by offshore vendors at the following job levels” on a five-point scale.

Independent question analysis on such ordinal data would lead to a misleading result as respondent choices are relative only to their opinion of a scale, which may differ between respondents. Each is accurate based only on a measure significant to the respondent. The proposed analysis counters this by using each score to contribute to an overall index of

impressions. “Combining Likert scales into indexes adds values and variability to the data. If the assumptions of normality are met, analysis with parametric procedure can be followed” (Allen & Seaman, 2007).

Chapter Summary

The Method chapter covered the research design and methodology used to collect and analyzed data through the use of an approved research instrument utilizing an online survey and Likert-style, closed-end survey questions. The analytical approach was quantitative, and used a correlational design to validate relationships between collected data. The major advantage of this design was that the resultant data can be easily analyzed through the use of sophisticated statistical testing that can be quantified and shown easily on charts and graphs. The major disadvantage was that quantitative analysis generally relies on large data samples. A small data sample size could increase the risk that results fail to achieve statistical significance. Significant results achieved with small data sizes, however, would still be significant with larger samples. Independent and dependent variables measuring the study data and calculated statistical results were also defined in this chapter.

This study included two research questions and their associated hypotheses. The first was concerned with overall value return to internal work teams as defined by the perceptions reported by the survey participants. Data was initially validated through the use of correlative analysis, and then compared to a minimum satisfactory level and tested for significant variation through the use of a two-tailed *t* test. Data was then graphed onto a Pareto diagram to illustrate data conformance to expected values.

The second research question and its associated hypothesis examined the relationship of individual performance factors and their contribution to overall job performance perceptions, and differences between the participant IT job roles and their perceptions of individual vendor performance ratings. Correlated differences were entered into a table, and the resultant means were analyzed for variance at a confidence level of 95% through two-factor ANOVA testing.

This chapter also covered population and sample demographic targets, and the informed consent, confidentiality and ethical concerns present. The research instrument was covered, along with a statement on validity and the data collection method used. Projections were made as to expectations of participation rates.

The data analysis section covered the strategy and analytics used to examine both research questions and to test their associated hypotheses. Regarding the first hypotheses, the data was first validated using correlational analysis, and then differences were tested for significance using a two-tailed *t* test. The analysis for the second hypothesis was done by a similar method, using a correlational analysis to validate the data, followed by an analysis of variation test (ANOVA) to test the differences found and their significance.

CHAPTER FOUR: RESULTS

The research questions asked by this thesis concern the quality of the service delivery perceived by internal work teams that serve as the primary consumers of offshore outsourced IT work product. While vendor performance is assumed to vary, some factors remain important to internal work teams. These factors are consistent with the perception of vendor job performance and ultimately the value of the service engaged.

Data Collection

Data collection was comprised of an IT-focused survey designed to elicit responses based on the impact that the use of offshore vendors have on internal work teams. The opinions of internal IT work teams were collected, focusing on three areas reflective of the two research hypotheses presented earlier in the Methods chapter. The first hypothesis addressed the value currently perceived by the primary consumers of the vendor's service. The second proposed that examination would reveal differences in suitability for offshoring between outsourced functions.

The survey was published on January 7th, 2015, and remained open until January 22nd, 2015. The IT Professionals survey was sent out to 67 direct email recipients. The survey was also posted in two LinkedIn.com professional groups: Citrix IT Professionals and Active Directory. In each case, survey recipients were asked to forward the survey link to associates in their companies to assist in its distribution. A follow-up to the first email, thanking participants for their participation, and requesting those who had not had time to complete the survey, to do so as soon as time permitted. The second note contained a closure date of Thursday, January 22nd. The survey was closed as of that date, and data collection was concluded.

Demographics

Data collection activities addressed the perceptions held by the primary consumers of offshore outsource vendor services, the internal IT work team members. Solicitations were sent to recipients on January 7th, 2015, selected from a pool of IT industry professionals comprised of IT professional associates and their colleagues, and two LinkedIn.com IT groups - Citrix IT Professionals and Active Directory. In addition, each was asked to aid in the dissemination of the survey to qualified friends and associates. The data collection period was 15 days and closed on January 22nd, 2015. Table 2 lists the sample demographics:

Table 2: Sample Demographics

<u>Survey Sample</u>	<u>Respondent Class</u>	<u><i>n</i></u>	<u>Survey %</u>
IT Professionals	Valid Responses	30	81.8 %
	Excluded ^a	7	18.2 %
Totals (<i>n</i> = 30)		37	

^a Seven results were excluded from the IT Professionals Survey due to incomplete or missing responses.
Note. An accompanying HR trends survey containing was removed due to insufficient participation.

The IT Professionals survey was used to report findings on their views of the service quality provided by external vendors in a number of areas. Recipients were asked to provide their opinion of the service quality that they received in ten categories of vendor service delivery, each representing areas commonly found within their company. Additional demographic data was collected from the respondents of the IT Professionals survey. Background information collected from participants identified respondents by IT department and level, education, and years of experience.

Of the survey participants that gave complete answers, six separate internal IT work teams types were represented, Application Development (*n* = 4), Hardware Support (*n* = 1), Helpdesk/Call Center (*n* = 2), Network Operations (*n* = 2), Server Operations (*n* = 11), and

Solutions and Architecture ($n = 10$). Responses came from a representative spectrum of job levels, including Senior IT Executives ($n = 1$), Department Managers ($n = 2$), Team Managers ($n = 2$), Team Leads ($n = 7$), Level III, Engineers ($n = 13$), Level II SMEs ($n = 3$) and IT Generalists ($n = 2$). A wide range of educational backgrounds were represented, including advanced graduate degrees ($n = 2$), Bachelor's degrees ($n = 14$), some college ($n = 4$), industry certifications ($n = 5$), High School or Technical School diplomas ($n = 2$), and self-taught ($n = 3$). Experience varied from over 20 years in the industry ($n = 10$), 16-20 years ($n = 12$), 11-15 years ($n = 4$) and 6 – 10 years ($n = 3$). One person declined to give their length of experience in IT. Years in current position broke down into 11-15 years ($n = 3$), 6-10 years ($n = 4$), 3-5 years ($n = 4$), and 0-2 years ($n = 17$). Two people declined to list the amount of time in their current position. Table 3 shows respondent demographics:

Table 3: Respondent Demographic Information

Respondent Demographic Information

<u>Category</u>	<u>Type</u>	<u>Frequency</u>	<u>Percent</u>
Dept. Focus	Application Development	4	13.3%
	Hardware Support	1	3.3%
	Helpdesk/Call Center	2	6.7%
	Network Operations	2	6.7%
	Server Operations	11	36.7%
	Solutions & Architecture	<u>10</u>	<u>33.3%</u>
	Total	30	100.0%
Job Level	Senior Mgmt.	1	3.3%
	Dept. Manager	2	6.7%
	Team Manager	2	6.7%
	Team Lead	7	23.3%
	Level III Eng.	13	43.3%
	Level II SME	3	10.0%
	IT Generalist	<u>2</u>	<u>6.7%</u>
	Total	30	100.0%

Respondent Demographic Information

<u>Category</u>	<u>Type</u>	<u>Frequency</u>	<u>Percent</u>
Education	Graduate Degree	2	6.7%
	BS/BA	14	46.7%
	Some College	4	13.3%
	Ind. Cert.	5	16.7%
	HS Diploma	2	6.7%
	Self-Taught	<u>3</u>	<u>10.0%</u>
	Total	30	100.0%
IT Experience	More than 20 years	10	33.3%
	16 - 20 years	12	40.0%
	11 - 15 years	4	13.3%
	6 - 10 years	3	10.0%
	Unspecified ^a	<u>1</u>	<u>3.3%</u>
	Total	30	100.0%
Years in Current Job	11 - 15 years	3	10.0%
	6 - 10 years	4	13.3%
	3 - 5 years	4	13.3%
	0 - 2 years	17	56.7%
	Unspecified ^b	<u>2</u>	<u>6.7%</u>
	Total	30	100.0%

^a 1 participant declined to provide length of experience in IT
^b 2 participants declined to provide length of service in current position

Data Analysis

According to the National Science Foundation (2002), “Data collected through quantitative methods are often believed to yield more objective and accurate information because they were collected using standardized methods, can be replicated, and, unlike qualitative data, can be analyzed using sophisticated statistical techniques”. The IT Professionals survey used was designed to measure views and perceptions based on a 5-point Likert scale. Responses were coded as: Very bad / significant negative impact = 1; Poor = 2; Fair = 3; Good = 4; Very Good / no

negative impact = 5. While the data in question was somewhat ordinal in nature, its treatment as interval data for the purposes of use with statistical tests based on the central limit theorem was justifiable as “conclusions and interpretations of parametric tests might be considered easier to interpret and provide more information than nonparametric alternatives” (Allen & Seaman, 2007). Through the use of the Likert scale, it was possible to quantify responses with a reasonable degree of granularity for the purposes of this study.

During the survey, IT professionals were initially asked a series of questions relating to their job position and function. This information was later used to filter responses to match experience and first-hand knowledge to the quality perceptions reported. Questions were then asked, structured from non-specific impressions, to more specific quality judgments based on 10 general factors relevant to the receipt of services generated and managed from a non-U.S. location. In each case, impressions were requested using a non-numeric scale with a least favorable to most favorable order. Responses were then quantified using the coding strategy above.

Hypothesis 1 Analysis: Overall Value Returned

The first hypothesis examined by the research concerns the value return generated by the practice of outsourcing work to offshore vendors as measured by non-financial benefit to internal work teams that act as the primary consumers of the delivered service. This is important because, although it is possible to measure the financial savings through a simple comparison of current costs versus quoted delivery price, prediction of future performance as contracted is difficult. This study examined performance and value return perceived by internal work teams that depend on offshore outsourced colleagues to perform essential services. As the primary consumers of vendor

services, these IT professionals are uniquely qualified to provide a first-hand opinion as to the quality of work performed. The first hypothesis is stated as follows:

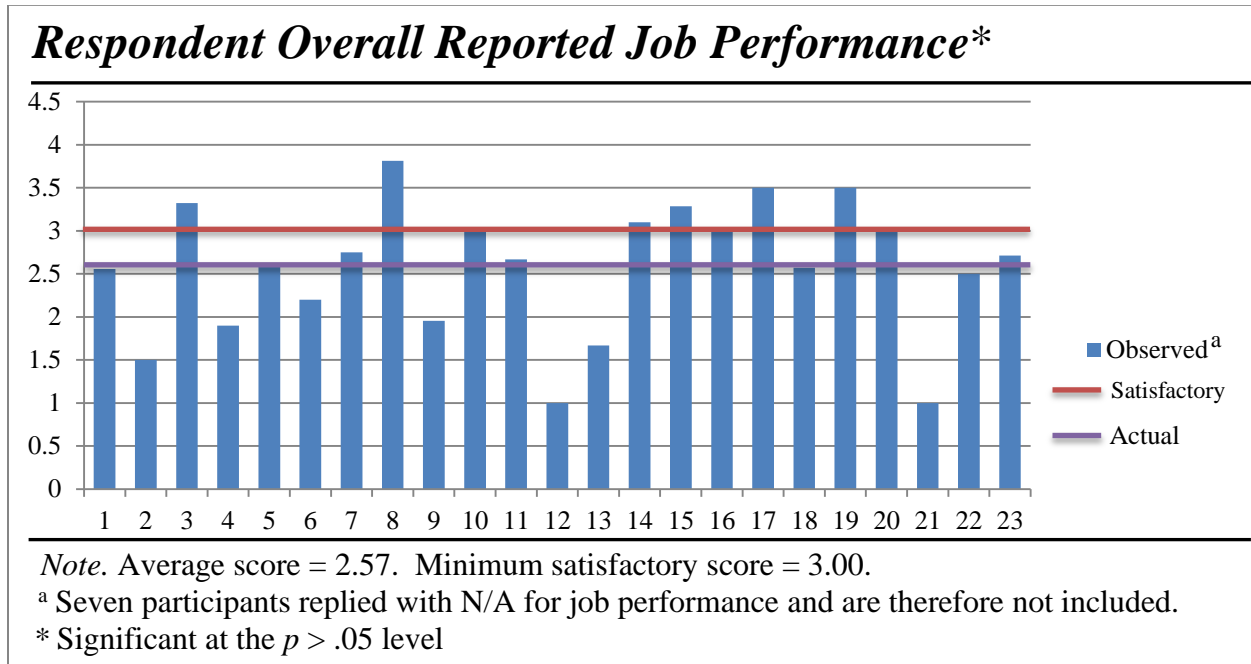
H₀: Offshore outsourcing of generalized, non-granular IT functions yields a positive or neutral value to internal teams.

H_a: Offshore outsourcing of generalized, non-granular IT functions yields a negative value to internal teams.

Responses were first examined to obtain an overall measure of satisfaction perceptions using a two factor correlation analysis to quantify results. The first collector, taken from IT Professionals Q8, measures reported job performance perception. The second collector was calculated from a mean derived from each person's responses to survey questions Q6 and Q7, rating individual departmental performances. A correlative analysis was performed to ensure that both measures were positively correlated using Pearson's *r* correlative coefficient. There is a significant positive relationship between the reported overall job performance collected in survey question Q8, and the calculated job performance derived from reported individual departmental scores, $r(21) = .65087, p < .001$.

Overall reported job performance of offshore outsourced vendors was derived by calculating the mean values of all reported, and of all calculated job performance scores. The two means were then combined into a representative mean for the purposes of rating the overall impression of value returned. Using the Likert-type scale specified in the survey, a value of 3.0 is considered the minimum necessary to perform satisfactorily. The resultant overall job performance perception is that offshore outsourced vendors scored 2.57, which is less than the 3.0 score considered satisfactory, as shown in Figure 1.

Figure 1: Respondent Overall Reported Job Performance



With regard to Hypothesis 1, there was insufficient significant effect regarding overall job performance, $t(22) = 2.57, p > .05$, with vendors performing similarly to satisfactory performance with a .43 point (8.6%) delta. The t-test failed to reject H_0 : (offshore outsourcing of generalized, non-granular IT functions yields a positive or neutral value to internal teams). H_a cannot be asserted with statistical significance.

Hypothesis 2 Analysis: Work Team Differences Present

The second hypothesis examined by the research concerns the use of a more detailed examination of job duties when considering individual factors important to the success of the vendor relationship. This is significant because each function in IT is separate and distinct, and each job role relies on a different skill set. This study examined individual IT work teams for differences in perceived factor importance. The second hypothesis is stated as follows:

H₀: Examination of currently offshored solutions fails to reveal a significant difference in factor delivery efficacy.

H_a: A granular examination of currently offshored solutions will reveal that some IT job roles have different views of which service factors are being delivered effectively.

Responses in two areas were examined to obtain an insight into those factors that each job role deems important. The first concerned respondents direct views of effective service delivery from offshore vendors. Departmental performance in eight examined factors and overall job performance perception was collected from all respondents in IT Professionals survey question Q8. In order to validate these factors – and the participants’ sampled replies, a correlative study was done. “Correlation is a statistical method used to assess a possible linear association between two continuous variables” (Mukaka, 2012). A matrix of Pearson correlation coefficients (Table 4.3) was constructed in which the strength and type of correlation of each factor to the others was determined.

Figure 2: Correlative Analysis of Collective and Departmental Perceptions

Correlative Analysis of Collective and Departmental Perceptions

<u>Function</u>	<u>#</u>	<u>Factor</u>	<u>α</u>	<u>p-value</u>	<u>1.000</u>
Collective	1	Job Performance			
	2	Native Language Comprehension ***	0.050	0.00001	0.707
	3	Accented Speech ***	0.050	0.00058	0.591
	4	Time Zone Differences ***	0.050	0.00003	0.688
	5	Communication Speed ***	0.050	0.00000	0.800
	6	Training Quality ***	0.050	0.00002	0.703
	7	Reliability ***	0.050	0.00000	0.891
	8	Availability ***	0.050	0.00000	0.831
	9	Communication Skills ***	0.050	0.00002	0.696
	10	Response Speed ***	0.050	0.00000	0.829

Correlative Analysis of Collective and Departmental Perceptions

<u>Function</u>	<u>#</u>	<u>Factor</u>	<u>α</u>	<u>p-value</u>	<u>1.000</u>
App/Dev	1	Job performance			
	2	Native language comprehension	0.050	0.69849	0.302
	3	Accented speech	0.050	0.80755	-0.192
	4	Time zone differences	0.050	0.49291	0.507
	5	Communication speed	0.050	0.05132	0.949
	6	Training quality	0.050	0.80755	0.192
	7	Reliability *	0.050	0.03775	0.962
	8	Availability	0.050	0.33333	0.667
	9	Communication skills	0.050	1.00000	0.000
	10	Response speed ^a	0.050	--	1.000
Server Ops	1	Job Performance			
	2	Native Language Comprehension	0.050	0.87169	0.086
	3	Accented Speech **	0.050	0.00954	0.919
	4	Time Zone Differences *	0.050	0.01631	0.894
	5	Communication Speed	0.050	0.90166	0.066
	6	Training Quality	0.050	0.88166	-0.079
	7	Reliability	0.050	0.81348	-0.125
	8	Availability	0.050	0.31250	0.500
	9	Communication Skills ^a	0.050	--	0.000
	10	Response Speed	0.050	0.17781	0.632
Solutions	1	Job Performance			
	2	Native Language Comprehension	0.050	0.06813	0.720
	3	Accented Speech	0.050	0.07938	0.701
	4	Time Zone Differences **	0.050	0.00307	0.923
	5	Communication Speed *	0.050	0.01424	0.855
	6	Training Quality	0.050	0.33658	0.429
	7	Reliability **	0.050	0.00596	0.899
	8	Availability *	0.050	0.02677	0.811
	9	Communication Skills	0.050	0.17190	0.580
	10	Response Speed	0.050	0.00299	0.923

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Due to statistical limitations, departments with less than 2 participants were omitted.

^a Due to limitations in the statistical software, p -value could not be calculated for this value.

The findings of the correlative analysis show a clear difference across values. The collective analysis is strongly correlated across all values. The departments analyzed differ both from each other in degrees and from the collective. Several departments mentioned in the survey did not generate enough responses ($n \leq 2$) and were therefore not examined outside of their contribution to the collective opinion.

Collective Analysis

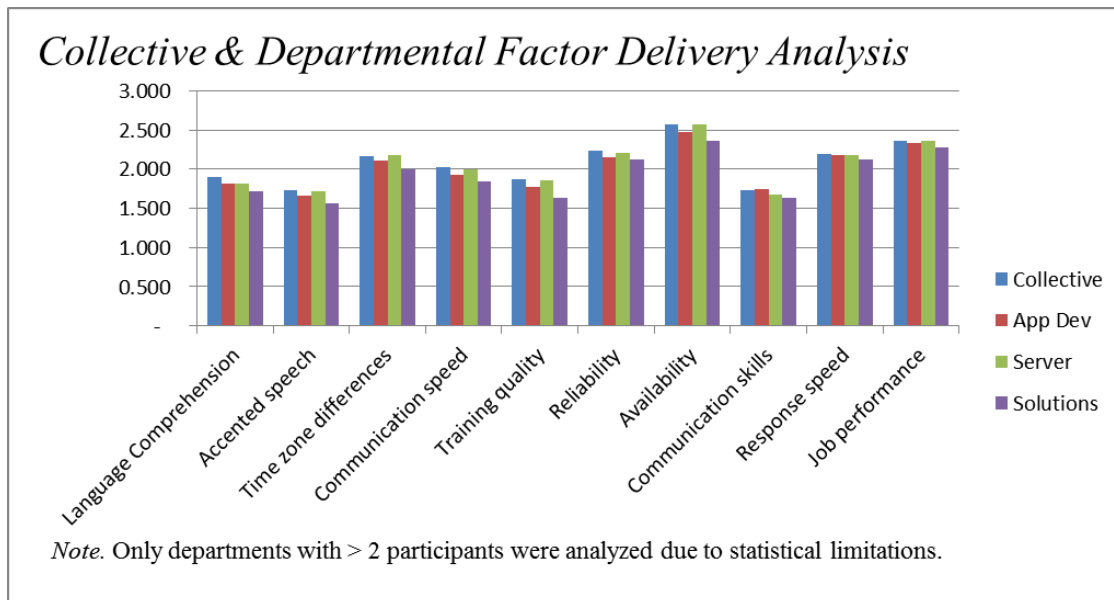
A collective analysis was done to determine the statistical significance of overall factor delivery. There is a significant positive relationship between language comprehension and job performance perception, $r(29) = .707, p < .001$. There is a significant positive relationship between accented speech and job performance perception, $r(29) = .591, p < .001$. There is a significant positive relationship between time zone differences and job performance perception, $r(29) = .688, p < .001$. There is a significant positive relationship between communication speed and job performance perception, $r(29) = .800, p < .001$. There is a significant positive relationship between training quality and job performance perception, $r(29) = .703, p < .001$. There is a significant positive relationship between reliability and job performance perception, $r(29) = .891, p < .001$. There is a significant positive relationship between availability and job performance perception, $r(29) = .831, p < .001$. There is a significant positive relationship between communication skills and job performance perception, $r(29) = .696, p < .001$. Finally, there is a significant positive relationship between response speed and job performance perception, $r(29) = .829, p < .001$.

Departmental Analysis

Each of the departments analyzed contained significant findings as follows. For the application development department, there is a significant positive relationship between reliability and job performance perception, $r(3) = .192, p < .05$. For the server operations department, there is a significant positive relationship between accented speech and job performance perception, $r(10) = .919, p < .001$. There is also a significant positive relationship between time zone differences and job performance perception, $r(10) = .894, p < .05$. For the solutions and

architecture department, there is a significant positive relationship between time zone differences and job performance perception, $r(9) = .923, p < .001$. There is a significant positive relationship between communications speed and job performance perception, $r(9) = .855, p < .05$. There is also a significant positive relationship between reliability and job performance perception, $r(9) = .899, p < .001$. Finally, there is also a significant positive relationship between availability and job performance perception, $r(9) = .811, p < .05$. Job score rankings are shown in Figure 3:

Figure 3: Collective & Departmental Factor Delivery Performance Analysis



Views of factor delivery efficacy may vary between IT work teams dependent on depending on department. A two-way analysis of variance tested the performance level perceived by members of various IT work teams. Sufficient participation was gathered from three departments for this study. The collective grouping from all participants scored consistently higher efficacy scores as shown in Table 4.5. With regard to hypothesis 2, there is sufficient reason

to reject H_0 , and accept H_a : granular examinations of currently offshored solutions reveals that some IT job roles have different views of which service factors are being delivered effectively.

Table 4: ANOVA of Factor Delivery Performance Ratings between IT Work Teams

Analysis of Variance of Factor Delivery Performance between IT Work Teams

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Factor Efficacy ***	2.842587	9	0.315843	304.4341	9.21658E-25	2.250131
Work Team ***	0.134424	3	0.044808	43.18954	1.93321E-10	2.960351
Error	0.028012	27	0.001037			
Total	3.005024	39				

Note. * $p = .05$, ** $p = .01$, *** $p = .001$

Chapter Summary

In this chapter data collection via survey, and general demographics were covered, along with the various hypotheses proposed in the methods chapter. The first null hypothesis proposed that offshore outsourcing of generalized, non-granular functions yielded a positive or neutral value to internal work teams. The test variables were tested using Pearson's r correlation coefficient. It was found that the calculated job performance means were significantly positively correlated to reported job performance at a significance level of $p = .001$. These test variables were then tested for variation using a paired t-test and insufficient significance was found to reject the null hypothesis.

The second hypothesis was analyzed using the validated job performance from H1, and each IT function was then segmented and tested using Pearson's r testing. Due to representative participation rates being insufficient to obtain results, some IT functions were unable to be analyzed. The three remaining IT functions – Application Development, Server Operations, and Solutions and Architecture – were tested using a two-factor ANOVA test. There were significant differences found between the perceived levels of service delivery for factors important to internal

work teams. There were also significant differences present between each IT function, prompting a rejection of H2: H_0 , in favor of H_a : A granular examination of currently offshored solutions revealed that some IT job roles are better suited for offshore outsourcing.

CHAPTER FIVE: CONCLUSIONS

This chapter presents a detailed discussion of the results of this study, implications drawn from its findings, conclusions and recommendations for industry action, limitations and delimitations of the study research, and recommendations for future study. The purpose for this correlational study was to examine the need for a more granular analysis of IT functional job roles prior to selection for offshore outsource vendor placement. This study relied on the concept that each IT functional work team was unique as to its purpose within the company, its internal service needs and factor delivery importance, and the level of reliance on effective service delivery in order to perform important data management duties.

Chapter five includes an analysis of the implications of both the findings and limitations of this research. This chapter also explores how these findings fit with expectations based on contemporary expert opinion. Additionally, recommendations for further discussion and future research are provided. Finally, recommendations applicable to the focus company, General Electric, and to the IT industry as a whole, are provided in order to reduce the cost of future labor redistributions.

Discussion

The goal of this study was to determine if a more granular examination of IT work teams would yield a better result by selectively outsourcing individual roles to offshore vendors rather than using a more holistic approach. It is common practice to outsource entire projects or even entire IT departments, reserving only management and direction functions within the company as internal employees. This wholesale outsourcing led to a question of whether the value returned cost the company more in the long run than the savings realized by offshoring labor.

This research was motivated by the common practice of outsourcing projects and departments within the Information Technology (IT) industry on a wholesale basis to offshore vendors in order to reduce costs. It was observed that in so doing, the quality of work delivered appeared to decline. Existing expert opinion was varied in the advisability of such action, warning that often increased risks were associated with the practice of offshoring, including cost savings that were lower than expected, an inability to deliver projects as specified, inflexibility, lack of innovation and insufficient technical expertise (Lacity & Hirschheim, 1993; Cronk & Sharp, 1995; Martorelli & Benkel, 2015). In the early 1990s, information technology (IT) advisors and academics began to advise their clients to utilize the practice of outsourcing to manage their IT operations at a cost savings of 10 to 50 percent (Lacity & Hirschheim, 1993). “In recent years, US manufacturing jobs have declined as corporations looked for cheap labor overseas” (Dossani, 2004). It is reasonable to conclude, therefore, that the phenomenon of outsourcing to markets that provide cost advantages is an established practice that will, in all likelihood, continue for the foreseeable future. Other experts advised the practice, pointing to GE’s apparent success (Kalakota & Robinson, 2005) as proof that such risks were negligible.

The focus company (General Electric) has long been a proponent of offshore outsourcing. Former CEO John “Jack” Welch argued that ‘70-70-70’ would be his company’s rule for sending technology work offsite: 70% would be done by outside suppliers, 70% of that overseas, and 70% of that in India (Kalakota & Robinson, 2005; Khatri, 2004). GE has, however, recently chosen to re-shore over 1,100 IT jobs in a reversal of a decades-old trend toward IT service commoditization (Immelt, 2012) reflecting this study’s findings as outlined below.

Financial justification – obtained through a comparison of costs between current IT-related expenditures and quotes from offshore vendors – is easy to analyze and is not covered in this

study. Internal value – as defined by this study as the satisfaction of internal IT-related service demands necessary for delivery to internal work teams for the performance of their daily tasks – is reliant on vendor assurances that sufficiently trained and capable resources will be assigned to each task. This study examines the experiential perceptions held by current IT professionals who have worked with external offshore vendors as to the service performance actually delivered and its ability to meet such internal demand.

Results

Two research questions were asked in this study. The first was, “Is outsourcing to offshore vendors returning a positive quality value return for internal work teams?” The second research question asks, “What granular, job role-based factors are most important to internal IT work teams acting as primary consumers of vendor-supplied offshore outsourced labor in predicting successful working relationships in support of their day-to-day IT management tasks?” This study was, therefore, focused on two levels of service performance delivery. First, it was necessary to determine if satisfactory performance levels were being achieved across the surveyed sample. Participants in the IT Professionals survey were asked to report findings on their views of the service quality provided by external vendors in a number of areas. Second, it was necessary to determine if individual IT functional roles significantly differed in their valuation of individual service delivery factors. It can be argued that if differentiation in service factor importance exists, a more granular examination would be more accurate in the prediction of offshore vendor placement success than would be a more holistic approach.

Research Question 1: Overall Value Returned

The first research question - “Is outsourcing to offshore vendors returning a positive quality value return for internal work teams” – was associated with hypothesis #1, which was stated as:

H₀: Offshore outsourcing of generalized, non-granular IT functions yields a positive or neutral value to internal teams.

H_a: Offshore outsourcing of generalized, non-granular IT functions yields a negative value to internal teams.

With regard to the question of value return, survey recipients were asked to provide their opinion of service quality received in ten categories of vendor service delivery, each representing areas commonly found within their company on a Likert-type scale. Response means were generated for all categories and validated against individual responses to a separate question asking respondents to rate overall offshore vendor performance. A correlative analysis was done to validate the test variables, and a t-test was used to determine rating separation variance. This analysis presented two possible outcomes. A returned satisfaction rating of 3 or more would indicate positive internal value and support the null hypothesis. A rating of less than 3 would indicate an unsatisfactory level of return, rejecting the null hypothesis.

While cost continues to be a consideration in the decision to use offshore vendors due to their inexpensive labor rates (Martorelli & Benkel, 2015), this study’s results show a lack of confidence in the internal benefit returned by offshore vendor use. This was somewhat expected and in line with recent expert opinion regarding the increased failure rates in project success as measured by outsourced project results. According to Forrester’s *Global Infrastructure Outsourcing* report for Q1, 2015, reducing costs ranks third on the top five priorities for 2015, based on a survey conducted of 13,822 global business and technology decision-makers

(Martorelli & Benkel, 2015). There is a tacit acceptance in the IT industry that decreased price often leads to a decrease in quality. The study research revealed an overall dissatisfaction with offshore service delivery performance in expected areas – such as language comprehension and accented speech, as well as in other, less-expected areas such as availability and response speed.

Overall job performance was rated at a 2.57, less than the 3.0 needed for a rating of satisfactory. The first hypothesis (H_a) posited that wholesale non-granular outsourcing yielded a negative internal return – as defined above – to internal work teams. Insufficient statistical significance was found to reject the null hypothesis in H_1 which considered the value returned as measured by internal service performance perceptions. Although service delivery scores fell below minimum satisfactory limits, the difference was not sufficient to prove a clear distinction at the 95% confidence level, and therefore the null hypothesis of H_1 was not rejected.

An expectation of a low rating was supported by expert opinion found during literary review, though many of the categories were rated unexpectedly low. Traditionally, the decision to offshore has been motivated – at least in part – by cost efficiencies available through the use of less expensive labor available in some countries. As early as the 1990s, cost savings from 10 to 50 percent were common (Lacity & Hirschheim, 1993). In the early 2000s, Dossani (2004) asserted that the phenomenon was sufficient to significantly impact the U.S. job market. The commoditization of IT service delivery has added to the view that “each activity within a firm’s value chain and within its traditional staff groups must be considered a ‘service’, which can just as easily be purchased externally (as cited in Cronk & Sharp, 1995). In recent years, however, as the IT industry has developed more experience with offshore outsourcing, emphasis on cost as the sole determining factor has shifted to a more inclusive list (Immelt, 2012; Martorelli & Benkel, 2015). This shift may indicate a more balanced approach to offshore vendor selection, in turn explaining

the lack of statistical significance in the result. Additional study limitations will be discussed later in this chapter.

Research Question 2: Work Team Differences Present

The second research question, “What granular, job role-based factors are most important to internal IT work teams acting as primary consumers of vendor-supplied offshore outsourced labor in predicting successful working relationships in support of their day-to-day IT management tasks” was associated with hypothesis #2, which was stated as:

H₀: Examination of currently offshored solutions fails to reveal a significant difference in factor delivery efficacy.

H_a: A granular examination of currently offshored solutions will reveal that some IT job roles have different views of which service factors are being delivered effectively.

With regard to the question of a differentiation in service delivery satisfaction rates between departments, the survey asked respondents to rate their satisfaction with vendor performance in 10 key factors. These factors were job performance, language comprehension, accented speech, time zone differences, communication speed, training quality, reliability, availability, communication Skills, and response speed. Significant differences in satisfaction ratings between individual functions and the overall job performance ratings examined in the previous hypothesis analysis can logically be interpreted as differences in priorities due to characteristics peculiar to each IT Work Team examined.

The second hypothesis (H₂) asserted that a more granular examination of job roles prior to selection for outsourcing will reveal that IT job roles differ in need based on the 10 factors listed in the previous chapter. A correlative analysis was conducted comparing both collective and

departmental performance to overall job performance. Considering the collective sample ($n = 30$), strong positive correlations were found between each factor and overall job performance:

Language Comprehension, $r(29) = .707, p < .001$, Accented Speech, $r(29) = .591, p < .001$, Time Zone Differences, $r(29) = .688, p < .001$, Communication Speed, $r(29) = .800, p < .001$, Training Quality, $r(29) = .703, p < .001$, Reliability, $r(29) = .891, p < .001$, Availability, $r(29) = .831, p < .001$, Communication Skills, $r(29) = .696, p < .001$, and Response Speed, $r(29) = .829, p < .001$.

When considering the correlation analysis on each of the three IT Work Teams with enough participation to analyze, the correlative coefficients change considerably. Statistically significant correlations were: Application Development ($n = 4$) related Reliability as having a very strong positive significant correlation to job performance, $r(3) = .962, p < .05$. The Solutions & Architecture department ($n = 10$) also rated Reliability as having a very strong positive significant correlation to job performance, $r(9) = .899, p < .01$.

Accented speech was considered to be a very strong positive correlation with job performance by the Server Operations department ($n = 11$), $r(10) = .919, p < .01$, though no other department returned significant results in this category. Time Zone Differences were considered by the Server Operations department to have a very strong positive significant correlation with job performance, $r(10) = .894, p < .05$, and the Solutions and Architecture team also considered this factor as a strong positive significant correlation with job performance, $r(9) = .923, p < .01$. The factor did not return significant results from the Application Development department. Availability was considered a strong, positive significant correlation with job performance by only the Solutions and Architecture department at significant levels, $r(9) = .811, p < .05$. This team also was the only department to consider Communication Speed as a strong positive significant correlation with job performance, $r(9) = .855, p < .05$.

The variation shown in the correlations – and lack thereof – were further tested by a two-factor analysis of variance (ANOVA). An analysis of variance showed that the effect of factor efficacy was significant, $F(9, 39) = 304.434, p = 9.21658E-25$. Further, the analysis of variance showed that the effect of work team was significant, $F(3, 39) = 43.190, p = 1.93321E-10$. In both cases, Significant statistical evidence ($p < .001$) existed sufficient to reject the null hypothesis and support this assertion. Of the IT work teams examined, there was significant variance at the 95% confidence level between factors considered important, as well as significant variance in overall performance delivery quality perceptions between IT work teams.

The study conducted for this thesis concluded that there were significant differences in the job performances of offshore vendors. The overall findings taken from a collective analysis of all respondents revealed that while availability, time zone differences and response speeds ranked relatively higher than other factors, factors such as language comprehension, accented speech, training quality and communication skills fell short of the “Poor” rating on the scale. Only availability ranked above a 2.5 (3.0 is considered satisfactory).

Empirical data shows that a trade-off exists when transitioning to offshore vendor use. The overall job performance ratings reflect a very low expectation of reliability (2.23 on a scale of 1 – 5). This seems to indicate an expectation of failure. This is an expected outcome as expert opinion predicted a loss of internal IT competence over time (Gulla & Gupta, 2009). An observed inability to deliver projects as specified ranked second on Forrester’s list of cost savings failures related to outsourcing (Martorelli & Benkel, 2015). This issue led to a conclusion that companies that use a holistic offshoring practice see an overall quality of work below that which their internal IT work teams view as satisfactory. The study conducted in conjunction with this thesis was, however, unable to reach a significant confidence level in this finding.

As to the second research question of whether a more detailed and granular examination would reveal differences in factor importance – or the difference in emphasis on one factor over another, a statistically significant finding that such differences are present was unexpected. An analysis of variance showed a clear difference present between both factor preferences within each IT work team examined, and differences that existed between IT work teams as well. This finding was significant at the $p < .001$ confidence.

Literature reviewed mentioned the need for several different factors to be examined in the decision to outsource to offshore vendors, but most of the experts listed such consideration at the holistic or per-company level (Cronk & Sharp, 1995; Butler, 2006; Roy & Sivakumar, 2011; Kalaignanam & Varadarajan, 2012). In fact, of the expert opinion reviewed for this thesis, only Cheifetz (2003) mentioned an analysis by function.

Significance of Findings

This study was significant to the IT industry and the focus company due to its value in selecting only those positions with a reasonable expectation of successful, quality service delivery; the avoidance of unnecessary upheaval and knowledge loss related to the replacement of internal and local IT resources; and the expense incurred if it became necessary to replace lost internal knowledge due to an ill-advised offshoring experiment (Ferreira & Prokopets, 2009). Companies engaging in offshore outsourcing lose internal IT competence and must rely on vendor assurances that services will be effectively delivered. It is expensive to revert to in-house IT management once outsourcing has been put in place so companies may become reluctant to reverse course and re-shore jobs once they are offshored.

This phenomenon understandably places pressure on companies to avoid reversing offshoring decisions, and could cause a company to be reluctant to admit a bad vendor choice. Gulla and Gupta (2009) refer to this as vendor captivity. While financial incentive provided by lower IT labor costs makes the use of offshore vendors attractive, the savings must be offset against potential downtime and delay resultant from difficulties arising from performance issues that a more granular examination may reveal.

This study was further significant as there is little research into the granular effect induced by the introduction of offshore personnel and the different levels of impact based on IT work team. The peculiarities of one IT work team's daily duties may have – for example – relied heavily on email, which would render heavily accented speech irrelevant. Another IT work team may require more real-time responses which may be hindered by accented speech. Holistic approaches that consider only cost may be ill-advised (Melos, 2010; Immelt, 2012), but there is not a dominant school of thought as to what factors to consider. This study added additional credence to the worth of close examination, on a granular, factor-based level, of each job role to be considered for exportation – rather than the wholesale offshore outsourcing of entire IT functions.

Based on this study's findings, common sense supports intense examination of each IT job role. This examination is needed prior to the decision to outsource to offshore vendors in order to understand the needs of the internal IT management function along with each of its component parts. As each company has its own unique mix of needs to support operations, each IT work team has a unique blend of values and priorities which differentiate those who work in that specialty from others. It is vital to have an in-depth understanding of the function internally in order to effectively contract for, and manage its efficient servicing by an offshore vendor.

Evidence for this need exists in the differences in factor delivery efficacy shown in the survey research. For example, in the factor “Reliability”, reliability was (holistically) rated by survey respondents as a strong positively-correlated part of their perception of overall job performance at $r(29) = .891, p < .001$. Solutions Architects see reliability as a significant, very strong positive correlation to job performance at $r(9) = .899, p < .01$. Application Developers, however, view reliability with a strong significant positively-correlated relationship to job performance at $r(3) = .962, p < .05$. Server Operations personnel actually view reliability as a very weak negative correlation to overall job performance, based on responses received, with an insignificant $r(10) = -.125, p > .05$. This result is so small that it is probable that there is little or no correlation present.

This study conducted research that showed a clear correlation between job performance and each of the individual performance factors examined. While this list of ten performance factors is by no means exhaustive, this highlights that each contributes to the overall perception of success. While correlation does not imply causation, it does identify areas for further inspection, providing evidence in support of a more granular examination as to the reasons why such a difference exists. Granular examination – and the increased understanding of each job role to be considered for outsourcing to offshore vendors – is strongly recommended by this research.

Another recommendation supported by the above evidence is that wholesale offshoring of entire projects or departments on the sole basis of cost savings is contrary to the best interests of an organization. In addition to cost savings, additional consideration of internal value – such as which factors are important to timely and successful fulfillment of offshore outsourced services – should play a part in any decision to contract IT services which are currently internally-sourced to external vendors. The research conducted during this study contributes to a growing store of

knowledge, backed by expert opinion, that such practice is ill-advised given the overall results of blindly accepting vendor promises of compliance with project or departmental objectives. 76.6% of respondents rated the value returned by the use of external offshore vendors as sub-standard to that of internal employees.

This study showed significant dissatisfaction with offshore outsourced vendor performance. While each department varied in their mean estimation of vendor performance, aggregate overall review revealed a lack of satisfactory performance. Companies reliant on critical IT functions should examine each position to be outsourced on an individual basis to determine if individual performance factors could present an obstacle to effective service delivery if sourced externally.

Study Delimitations

This study was undertaken in order to examine the phenomenon of offshore outsource use pursuant to GE's recent decision to reverse a decades-old policy of locating the majority of new positions offshore, and locate 1,100 new IT jobs in Michigan. In the process of reviewing their reasoning out of curiosity, and due to a long association with both the company and their products, an initial research opportunity presented itself in the question of how to best select which IT positions are best kept here at home, and which could be successful overseas.

As an IT engineer with over 25 years of professional experience in the industry – including a certification as a Black Belt in Six Sigma – I was extremely comfortable with both the technology and personnel aspects of IT management, as well as its statistical examination. Additionally, much of my experience was with global corporations that utilized offshore

outsourcing and international labor placement. This topic was one in which I felt well-qualified to explore.

As it was necessary to delimit research to that manageable within the parameters assigned as a requirement for this research, the research focus was narrowed to include only IT professionals as participants within the research conducted. Practicality demanded that a quantitative data collection would be most suitable to the numeric statistical examination to which I was accustomed. For that reason, a survey-based methodology using Likert-style survey responses offered the ability to conduct comparisons using replicable methods that would lend themselves to further research. Additionally, the use of discrete, closed-ended responses limited error that could be introduced if interpretation of respondent meaning were necessary.

In order to use closed-ended responses, it was necessary to limit the choices presented to the respondent for each survey question. There were two areas in which this delimitation may impact the data collected. First, it was necessary to produce a list of common IT departments for categorization. The mechanics of the online survey delivery mechanism limited responses to 10 choices, so ten commonly-used IT work teams were presented. Some survey respondents did not fit cleanly into one department, so in cases where it was possible to do so, a selection based on their comments was made. In some cases, survey responses ended at this question, leading to the assumption that respondents interpreted the lack of a specific category to mean that they were unqualified to continue.

The second case includes the choice of factors in which offshore vendor personnel were rated by respondents. This list – also limited to ten responses for the practical reasons listed above – was by no means exhaustive. Factors were selected based on experience with the offshore personnel with whom I had previous experience. This factor choice may or may not represent the

most appropriate for rating job performance. For this reason, each factor was tested for positive correlation against the collective overall sample base. Each was found to be strongly-correlated and significant at $p < .001$.

In order to quickly distribute the research survey, an online survey engine was chosen based on its advertised functionality and affordability. SurveyMonkey.com, a website-based survey engine offered the ability to distribute surveys using a discrete, anonymous web link that could be communicated via email, posted in a group, or even communicated over the telephone. While the engine offered the ability to contract a fixed number of targeted recipients, due to limited funding this choice was not practical.

Study Limitations

This study was primarily limited by the academic venue in which it was conducted. The constraints of the Master's Thesis framework dictated that research was to be conducted within a fixed time-span. Research methodology and instrument approval was required prior to starting data collection activities, and all data collection was required to end with sufficient time to meet an assignment submission deadline. The resultant data collection opportunity was also limited by the need to compile and analyze the data prior to assignment submission. Finally, submission and approval times were interrupted due to the holidays and end-of-year professional duties. The resultant data collection window was 15 days in length, which drastically reduced the opportunity to distribute and collect questionnaires.

The number of participants in the sample represented a huge population. The Institute of Electrical and Electronic Engineers (IEEE) estimates that there are 1.9 million IT workers in the United States (Charette, 2013). The sample size ($n = 30$) is very small in comparison, raising the

possibility of sampling error. For that reason, comparative quantitative statistics methods become more sensitive to the assumption of sampling error, making the threshold of statistical significance harder to reach. The small sample size was made necessary by both time and funding. While a number of findings led to promising academic insight, the small sample size interfered with the ability to achieve statistical significance at or above a 95% confidence level. As sample sizes become larger, statistical significance becomes more frequently possible due to the use of a more representative depiction of the population parameter being studied.

Limited funding also directly impacted the ability of the study to measure attitudes. While several targeted respondent pools were available for purchase, the cost was not within the researcher's ability to afford. The survey engine used quoted a cost of responses targeted to IT professionals currently employed that was beyond the financial ability of this study. The respondent pool and resultant sample size was therefore limited to professional contacts and groups in which the researcher was a member.

The specific nature of the respondent required – in order to obtain meaningful data – resulted in another limitation faced in this study. IT workers work with a huge volume of email and may have chosen to filter unsolicited emails originating from outside their company. In order to effectively filter internet “noise”, many companies have installed filters that automatically scan incoming email for patterns or key words and remove emails that fit those profiles. It is possible that solicitations for participation may have triggered such filtration.

The sample size may have been impacted by the proliferation of internet-based security threats and attempts to defraud through faked emails. Security concerns about unsolicited surveys may have prompted people to delete the email rather than take a chance with suspect emails, even if they were familiar with the sender. As it was impossible to personally contact every recipient,

many may not have trusted the sincerity of the request. Additionally, given the subject matter, company confidentiality may have prompted some recipients to forego participation. At least one recipient responded with regrets due to a prohibition against participation in such surveys in company policy.

Study quality was also limited by the choice of respondent. For practical reasons, it was necessary to limit the pool of recipients to English-speakers. Additionally, as the research was framed by a choice to examine offshore outsourcing, it was necessary to provide a point of reference understandable to the researcher. For that reason, respondents were all residents of the United States. As U.S.-based IT personnel, offshore labor represented a potential for job loss and therefore may have introduced a negative bias to responses. It is assumed that respondents were honest in their replies, but honesty cannot be guaranteed.

Finally, the analytical approach chosen – quantitative analysis – presented limitations of its own. “Quantitative research is an approach for testing objective theories by examining the relationship among variables” (Creswell, 2014). This theoretical nature limited the implications of this study. The primary limitation of quantitative analysis is that correlation can be shown, but causation cannot be proven. A strong correlative relationship between two variables can introduce the opportunity for further investigation into causation, but cannot by itself prove a causal relationship.

Recommendations for Further Research

There were a number of limitations on this study that can potentially be avoided through the addition of a longer period of time in which to collect data. Sample size was clearly restricted due to the length of time allotted for published survey collection. The first recommendation,

therefore, is to conduct a much longer survey to improve sample size and allow the preparation of more robust statistics. Additionally, in the event that increased funding is available, responses can be contracted from a sampling service to expose the research to a more widely-diverse sample, more representative of the overall IT professional population.

Beyond limitations linked to this study, further research including the addition of financial information would contribute to a more complete understanding of this important research. Time constraints prevented a more complete construction of a full framework designed to provide a replicable formula by which the true cost of internal value could be quantified which more accurately predicts the degree of offset – if any – caused by this practice. The addition of a financial cost segment, quantifying savings, could potentially produce a calculation enabling companies to accurately measure an accurate representation of offshore outsourcing value return.

Conclusion

This chapter included a more detailed look at the findings of the last chapter, along with conclusions and recommendations based on this research. This study's goal was to explore the practice of offshore outsourcing at a more granular level to answer two important research questions. The first, related to the perception of internal value – as defined by the efficacy of service delivery performance, attempted to determine if a negative impact to the job task of primary service consumers was present. The second question was related to whether value would be found in a more granular examination of job roles based on differentiation of impact present between departments.

A quantitative survey, using a Likert-style scale, was conducted and produced 37 responses. After invalid responses were removed, 30 responses remained and were analyzed using

a number of quantitative methods. The survey consisted of demographics used to qualify respondents, questions designed to elicit value perceptions on a collective level, and valuation judgments of service quality returned on a departmental scale.

The first research question was developed into a hypothesis that stated that the practice returned a negative value to internal users. This hypothesis was tested by responses that generated a lower than satisfactory score of 2.57 on a scale of 1 – 5, with 3 designated as a satisfactory score. While the score failed to achieve a satisfactory rating for this sample, the difference was not found to be statistically significant in its representation of the overall IT community.

The second research question was developed into a hypothesis that stated that different IT work teams and job roles valued individual aspects of service delivery at different levels of factor importance. This thesis asserts that if two or more IT job roles define the same factor of service delivery with different levels of importance to the fulfillment of their IT management demands, a more detailed examination of each job role to be offshored is warranted as it will allow the selective outsourcing of only those roles that prove the most suited.

Survey respondents rated the performance they have observed in service delivery in ten categories related to common factors judged to be practical for the use of this study. Responses were correlatively analyzed against overall job performance scores and found to be strongly, positively correlated at a confidence of over 99.9% ($p < .001$) in order to validate their use. Mean scores were then tallied by job role and an ANOVA analysis was conducted to detect variation and significance of differences. A finding that differences were present that were significant at a confidence level of greater than 99.9% between IT job functions recommended the rejection of the null hypothesis in support of a more granular evaluation.

The results of this study were not exhaustive, and further study is recommended with much larger sample sizes. The use of larger samples will reduce any impact of individual respondent bias on study results. Additionally, the inclusion of other, more inclusive criteria would increase study accuracy as well. The further inclusion of average financial cost savings percentages, or the addition of a decision-making framework promise to increase the value of this study to companies considering the offshore outsourcing of contracted work.

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APPENDIX A: INVITATION TO PARTICIPATE IN ONLINE RESEARCH

Greetings,

You have been invited to participate in an anonymous survey on your perceptions of the practice of IT outsourcing using offshore vendors. Your opinions are an important part of this study. The purpose of this study is to identify trends and factors important in deciding which IT-based job roles are appropriate for placement offshore using vendors, and which are best kept internal and local. This study will contribute to the completion of my Master of Business Administration Thesis, and is important both on a professional and personal level.

In order to participate, please complete this survey by navigating to the following website:
[Website Link]

This survey will require about 10 minutes to complete. There is no risk to your participation as all answers are given anonymously, no personal or company information is taken or recorded, and all participation is done via a third-party survey engine. There are no confidentiality concerns or violations of policy as the survey asks only for your opinions and perceptions.

Participation in this survey is voluntary, and you are free to choose not to participate. If you have questions or concerns during study participation, or after its completion, please feel free to contact me via return email.

The survey will be closed as of Thursday, January 22, 2015 at 5:00 PM CDT.

Thank you again for your participation.

Bob Moscardini, B.S.B.A., C.S.S.B.B.
Graduate MBA Candidate
College of Business and Management
Cardinal Stritch University

APPENDIX B: FOLLOW UP EMAIL TO ONLINE SURVEY PARTICIPANTS

Greetings,

This is a reminder that you have been invited to participate in an anonymous survey on your perceptions of the practice of IT outsourcing using offshore vendors. Your opinions are an important part of this study. The purpose of this study is to identify trends and factors important in deciding which IT-based job roles are appropriate for placement offshore using vendors, and which are best kept internal and local. This study will contribute to the completion of my Master of Business Administration Thesis, and is important both on a professional and personal level.

If you have already completed the online survey, thank you very much for your contribution to my education and to the overall knowledge available on the topic. You have my gratitude and you can take satisfaction in the knowledge that you have helped improve our understanding of this very significant topic.

If you have not yet had time to complete this survey, please consider doing so now at [Website Link]

This survey will require about 10 minutes to complete. There is no risk to your participation as all answers are given anonymously, no personal or company information is taken or recorded, and all participation is done via a third-party survey engine. There are no confidentiality concerns or violations of policy as the survey asks only for your opinions and perceptions.

Participation in this survey is voluntary, and you are free to choose not to participate. If you have questions or concerns during study participation, or after its completion, please feel free to contact me via return email.

The survey will be closed as of Thursday, January 22, 2015 at 5:00 PM CDT.

Thank you again for your participation.

Bob Moscardini, B.S.B.A., C.S.S.B.B.
Graduate MBA Candidate
College of Business and Management
Cardinal Stritch University

APPENDIX C: IT PROFESSIONALS SURVEY QUESTIONS

1. Which of the following functional IT departments exist at your primary employer or work location? (Check all that apply)

- Network Operations & Maintenance
- Server Operations & Support
- Solutions Engineering & Architecture (non-programmers)
- Application Development & Support (non-DBA)
- Database Administration, Design or Programming (DBA)
- Hardware Support & Troubleshooting
- Dedicated Helpdesk or Call-center (phone support)
- Desktop & End User Support (Deskside)
- Outsourced Support

2. Which of the following functional IT departments most closely describes your department and job role at your primary employer: (Choose 1)

- Network Operations & Maintenance
- Server Operations & Support
- Solutions Engineering & Architecture Design (non-programmers)
- Application Development & Support (non-DBA)
- Database Administration, Design or Programming (DBA)
- Hardware Support & Troubleshooting
- Dedicated Helpdesk or Call-center (phone support)
- Desktop & End User Support (Deskside)
- Outsourced Support
- Other (Specify Below)

Other (please specify)

3. Which of the following describes your level of strategic authority or employed level of expertise? (Choose 1)

- Senior Management of IT
- Departmental Management
- Technical Team Manager
- Non-Management Team Lead (no hiring authority)
- Level III – Senior support engineer/senior technician/top-tier problem resolution
- Level II – SME technician/Support engineer with escalation path to Level III
- Level I – Helpdesk engineer/phone support technician
- Unclassified multi-dimensional support/IT generalist
- Other (Please specify)

Other (please specify)

4. Which of the following best describes the level of education, training or certification needed to perform your job duties?

- Advanced Degree (PhD., MS, MBA)
- BS/BA (4-year college degree)
- Some college
- Technical School/High School Diploma
- Industry certification (CompTIA A+, MSCE, CCNA)
- N/A or Self-Taught

Please specify any Technical Certifications you have?

5. How many years...

0-2 3-5 6-10 11-15 16-20 20+

How long have you worked in IT?

How long have you worked in your current position?

Have you ever lost a job to outsourcing?

6. Do any of the following departments in your company use offshore outsourcing for labor?

Please rate each as to your opinion on their use and suitability (check 2 per line)

	Used Today	No longer used	Never used	Very good experience	Satisfactory experience	Unsatisfactory experience
Network Operations & Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Server O/S Operations & Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solutions Engineering & Architecture (non-programmers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Application Development & Support (non-DBA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Database Administration & Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hardware Support & Troubleshooting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dedicated Helpdesk (phone support)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desktop Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please comment on your view of offshore outsource vendors

9. Specifically addressing offshore vendors, what is your impression of the value returned by their use as opposed to internal employees? (Choose 1).

- Their work product is mostly superior to that of internal employees
- Their work product is mostly equal to that of internal employees
- Their work product is mostly sub-standard to that of internal employees
- Comments

10. Would departmental/functional performance change on a 24x7 basis if offshore vendors were not used? (Please choose N/A if offshore vendors are not currently used).

- Yes, it would likely degrade
- Yes, it would likely improve
- No, it would not change significantly
- N/A
- Other (please specify)