

AN ANALYSIS OF THE FINANCIAL EFFECTS  
OF ONSHORING ON PUBLICLY TRADED  
COMPANIES IN THE UNITED STATES

by

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## INTRODUCTION

### PREFACE

Onshoring, the process of relocating a business process currently completed in a foreign country to a company's home country, is a relatively new phenomenon in the United States. This sourcing strategy also referred to as "reshoring," "backshoring," and "homeshoring," exists as a direct consequence of the offshoring trend of the past several years. The offshoring movement resulted in a mass exodus of manufacturing production and information technology processes from the U.S. to numerous foreign countries.

### OFFSHORING

#### *HISTORY AND PREVALENCE OF OFFSHORING*

The offshoring phenomenon began between the 1950's and 1960's as several U.S. companies outsourced manufacturing production to emerging Asian countries, such as China and Taiwan, through contract manufacturers (Clark, 2004; Jensen & Pedersen 2012). In the past 20 years, offshoring to China, India, the Philippines, Russia, and countless other developing nations has grown at exponential rates (Pande, 2011; Tate, Petersen, Ellram, & Schoenherr , 2012; Jensen & Pedersen 2012).

The offshoring trend encompasses numerous business areas, as well as both large and small firms (Carmel & Nicholson, 2005). The most commonly offshored process is software and information technology development (Clark, 2004; Krishna, Sahay, & Walsham, 2004). More than half of U.S. Fortune 500 companies offshore software development, and 67% of companies in a 2004 Hewitt Associates study of 500 firms indicated that they sourced IT from foreign companies (Clark, 2004). However, other business functions are susceptible to offshoring, as nearly half of the firms surveyed offshored business processes or planned to initiate this sourcing strategy within the next

three years (Clark, 2004). Additionally, 49% of these companies offshored customer relations, 42% offshored manufacturing, and 41% offshored other supply chain processes (Clark, 2004). This trend toward global sourcing as a primary procurement strategy has not abated in recent years; many firms continue to outsource tactical business areas overseas.

#### *ADVANTAGES OF OFFSHORING*

Numerous reasons exist for the popularity of an offshoring business model in America, such as increased specialization, access to foreign knowledge, quality advantages, and decreased prices (Gorbunova & Moisello, 2008; Jaehne, Riedel, & Mueller, 2009). The most commonly cited motives are a more flexible supply chain, a diminishing skilled labor force, cost savings, and the stabilization and development of a larger resource pool in low-wage economies (Gorbunova & Moisello, 2008; Krishna et al., 2004).

Outsourcing provides a flexible supply chain, especially during periods of crisis, such as natural disaster or disease (Nagurney, Min, & Qiang, 2011). Sourcing abroad may mitigate the effects of domestic crises, like Hurricane Sandy in the Northeastern United States in 2012, by diversifying production and process locations. Additionally, American companies may obtain a larger scope of products when purchasing abroad, offering flexibility in the materials a firm employs (Gorbunova & Moisello, 2008).

Furthermore, experts state that United States does not produce professionals with the capabilities to perform necessary job tasks (Cuneo, 2012). As the outsourcing trend results in numerous factory shut downs, citizens are not striving to obtain the manufacturing skills necessary for positions currently nonexistent in the United States

(Palmieri, 2012; Carmel & Nicholson, 2005). Even during periods of high unemployment rates, there is a gap between the skills that American job seekers possess and what companies require. Companies like ACH Food Co. and Sierra have held certain manufacturing positions open from between six months to over a year during one of the worst periods of recession in America to date, but are unable to match U.S. workers to the qualifications the company requires (Cuneo, 2012; Carmel & Nicholson, 2005). The Boston Consulting Group recently estimated that the United States has a shortage of between 80,000 and 100,000 skilled manufacturing employees, a significant, but not yet worrisome, number (Skills Gap, 2012). While some, like the Boston Consulting Group, believe that the skills gap lacks the severity other experts proclaim, all agree that the lack of highly-skilled manufacturing workers in the United States will become a severe issue in the next few years without aggressive revival strategies (Skills Gap, 2012; , 2012; Carmel & Nicholson, 2005).

Additionally, 92% of the companies surveyed in the Hewitt Associates study indicated that reduced costs were the primary driver of their sourcing decisions (Clark 2004). Competitive rates, union agreements, and minimum wage legislation dictate relatively high wages for all employees in the United States; however, companies have been able to compensate foreign workers with fractions of domestic wages (Pande, 2011; Tambe & Hitt, 2012). While previously marred by instability, these emerging economies are now poised as secure global manufacturing centers that can reduce firms' labor costs by up to 90% for comparatively experienced employees (Carmel & Nicholson, 2005).

## **RESULTING EMERGING PHENOMENON**

Currently, a new trend toward vicinity sourcing may be gaining momentum. Companies are demonstrating interest in onshoring and nearshoring, the process of relocating a business process from a distant foreign location to a foreign location in the vicinity, e.g. an American corporation outsourcing manufacturing in China moving production to a company in Mexico. Despite the multitudes of organizations presently moving operations abroad and significant reasons for offshoring discussed above, onshoring exhibits potential as a growing phenomenon in the U.S. While the occurrence has not reached widespread acceptance, a veritable onshoring and nearshoring trend would indicate serious modifications in American business and requires further examination.

## **AGENDA**

The thesis will address the financial ramifications of firms' onshoring actions to determine if onshoring has been a viable, profitable strategy; this will give insight as to whether onshoring will be a popular trend for U.S companies in the future.

This manuscript will first address the onshore sourcing phenomenon through an overview of available literature; it will summarize current information and studies concerning this sourcing strategy. It will identify cited and speculated reasons firms decide to onshore despite the trend toward offshoring, including repudiating each of the benefits of offshoring stated above. The document will then cite expert opinions on the future of the reshoring trend in the U.S. Additionally, this thesis will provide an event study of the reshoring of supply chain operations; it will analyze the financial and operational performance of forty publicly-traded U.S. companies before and after making

investments in the decision to onshore. Finally, the document will discuss the results of the event study and consider their implications on the future of business in the United States.

### RESEARCH QUESTION

#### **RESEARCH QUESTION**

This thesis seeks to determine whether or not the practices of onshoring and nearshoring have been financially beneficial to publicly traded United States companies that have undertaken the strategies in the past several years. The manuscript seeks to answer one specific question surrounding financial success of the firms: had onshoring resulted in a financial effect on firms' relevant supply chain performance measures, such as inventory, inventory turnover, cash to cash cycle, return on assets, and gross profit margin. This manuscript will delve into these intertwined measures to provide an answer the general question of the profitability of onshoring as a sourcing strategy in the United States.

#### **RELEVANCY**

The widespread success or failure of an onshoring trend would indicate a need to prepare differently for the resulting business environment in the United States. However, despite numerous trade publications, consulting groups, and government programs predicting the success of this sourcing strategy, no parties are currently studying the ramifications of onshoring on the businesses undertaking it for tangible, meaningful results (Selko, 2013). If onshoring does not provide advantages touted in the media, there is little chance that this strategy will become widespread.

If this study provides evidence that onshoring is a financially viable trend for the coming years, the United States may need to prepare for a potential influx of business processes. As previously discussed, the United States does not currently possess the labor force with necessary skills for the type of processes potentially returning to America. An increase in the onshoring trend may require additional training and continuation of current government programs, like trade schools, the government-sponsored National Skills Certification program, which provides citizens with the skills and qualifications necessary for manufacturing positions, and private business-partnership programs (Atkins, 2012; Selko, 2013; Skills Gap, 2012). However, this changes if there is no evidence the trend will become widespread. In that case, the funds and efforts dedicated to preparing citizens for positions which no longer exist in America may be better allocated elsewhere. Additionally, businesses may reconsider their supply chains and sourcing strategies. Businesses with suppliers participating in onshoring may need to expect new lead times, quality standards, costs, and other considerations if any tier of suppliers along their supply chain decides to onshore. The onshoring trend, or lack of a trend, may inspire businesses to consider current sourcing strategies and contracts. The results of this study will give insight into the potential prevalence of onshoring, allowing businesses, citizens, and the government to make informed decisions about current strategies and resource allocation in order to best prepare for the future.

Despite the heavy publicity surrounding the strategy, onshoring has yet to be studied in depth. President Obama made the topic of onshoring, especially surrounding the “Made in the USA” stigma and job creation, noteworthy through State of the Union addresses and federal manufacturing initiatives (Selko, 2013). Mr. Obama stated that

“Our first priority is making America a magnet for new jobs and manufacturing,” citing several companies that recently onshored as “bringing jobs back” to the United States (Obama’s 2013, 2013). The prospect of manufacturing and completing additional business processes in the United States to spur job creation was at the forefront of the 2012 United States Presidential Election; onshoring is currently a popular subject in the media. Additionally, Boston Consulting Group estimated in 2012 that onshoring from China could aid the creation of 2.5 to 5 million jobs in the United States by 2020 (Skills Gap, 2012). However, sources only speculate the future of onshoring and practicality of the trend’s subsequent effects, like job creation, with no evidentiary support.

Additionally, there are several groups solely dedicated to supporting the onshoring trend, such as the Reshoring Initiative, currently being funded by multiple sponsors, such as The Society of Manufacturing Engineers and Sescoi (Moser). These companies and initiatives are gaining popularity in the press and spending significant sums to advertise their cause, but currently do not have any physical evidence that the trend will have longevity. Also, parties like the Boston Consulting Group have published numerous studies on the future of onshoring, citing numerous reasons this strategy should become widespread in the future but do not offer hard data on the realized benefits of this action (Sirkin, Zinser & Hohner, 2011). Global supply and business strategies with a focus on offshoring are currently being evaluated in detail by numerous sources; studies include evaluating success factors in business process offshore outsourcing, the use of control mechanisms to eliminate foreign risk, and significant numbers of others (Srivastava & Teo, 2012; Whitaker, Mithas & Krishnan, 2010). Nonetheless, there is little data-driven information about onshoring. There is currently an information gap

between theorized benefits of onshoring and actual benefits, and closing this gap will determine the future of business in America.

Despite sources claiming the strategy will or will not become a widespread trend in the United States, no parties have determined the effects of the phenomenon on companies participating. Examining whether or not the onshoring strategy is viable will provide insight into the future business environment in the United States. The results of this study will provide indication of whether or not onshoring is likely to become a feasible trend. Such insight will allow the country to properly prepare the labor force and long term business strategies.

### **THE SOLUTION**

The solution will be provided in the form of analysis and coverage of several years of archival financial statements. Companies will be segmented based upon contextual information and analyzed within segments to determine specific trends within groups. The manuscript will display statistical data and an analysis of the information signifying if onshoring had an effect, either positive or negative, on a majority of companies or a majority of companies within a specific segment.

### **LEARNING OBJECTIVES**

The answer to the posed questions will provide the information necessary to make an informed prediction about the future direction and effects of the United States' processes. It will also enable readers to understand how changing macroeconomic factors are affecting the decision making process involved in offshoring and onshoring sourcing strategy trade-offs.

## REVIEW OF LITERATURE

### **INTRODUCTION**

There are numerous reasons as to why the tide may be turning from offshoring to onshoring certain business processes. While a majority of these motives involve physical products, several apply to the service sector as well. The main reasons for the onshoring trend gaining popularity typically lies in seven major areas in which companies underestimated costs, needs, and preferences when making the decision to offshore. These key areas include misunderstanding the total cost of ownership, lack of flexibility, the importance of contact with customers, intellectual property protection, quality standards, public relations, and communication barriers. However, some experts doubt the effects of these issues are pervasive and impactful enough to result in a sustainable onshoring trend.

### **REASONS TO ONSHORE**

#### *TOTAL COST OF OWNERSHIP*

One of the primary factors in the decision to reshore production arises from companies' misunderstanding the total cost of ownership of their original offshoring business decision (Gasparro, 2009; Ritter & Sternfels, 2004). While product purchase price and labor costs may be the most obvious expenses for firms considering sourcing options, numerous other costs affect the total expenditures necessary to procure goods and services (Zelinski, 2010). For example, the cost of labor has been significantly lower in foreign countries, such as China, India, and Taiwan, than in the United States, making the cost to produce abroad appear minuscule in comparison (Bodamer, 2012; Skills Gap, 2012). Despite low wages, companies may spend significantly more on transportation,

inventory, quality-assurance, and other expenditures that negate labor cost savings and consume numerous time and energy resources.

In many cases, companies underestimated the impacts of other costs and considerations, such as inventory costs and political instability, on profitability. The lack of foresight in sourcing decisions has resulted in unexpected increases in expenditures for 56% of companies sourcing from offshore locations (Tate et al., 2012). Long lead times may dramatically damage sales figures by creating shortages and stock-outs while companies await replacement shipments, whereas domestic suppliers are generally able to restock more quickly to mitigate lost revenue. Additionally, longer lead times require holding additional safety stock in order to maintain the current service level, the probability of not stocking out of a product (Huang & Yao, 2013). The additional safety stock elevates inventory holding costs dramatically, increasing liabilities and costs arising from damage, shrinkage, and obsolescence (Bodamer & Misonzhnik, 2012; Huang & Yao, 2013). Companies are also subject to forecast error costs during volatile demand. These costs, like excess storage and obsolescence costs, have been proven to negate offshoring cost-saving advantages. For this reason, many researchers suggest companies should maintain local production facilities in both offshore and onshore locations to assuage risk (Stratton & Warburton, 2006). In addition to these expenses, international sourcing may require additional customs expenses, forwarder operational costs, export and import tariffs, and additional expenditures associated with managing international exchange (Gorbunova & Moisello, 2008). Combined with the added cost of transportation, time, and resources required to send managers to offshore locations to

monitor progress and behavior, offshore locations require significantly more capital than firms often expect (Read, 2011).

Companies sourcing abroad are often subject to numerous additional risks and issues that damage productivity and profitability. These include quality issues, which are discussed in detail further in the manuscript. In the case of these concern, companies may determine the need employ additional resources to perform quality-assurance checks superfluous to what would be required when sourcing domestically. This adds additional costs and lengthens lead time. Furthermore, quality issues may require expedited shipments in order to alleviate stock-out costs, employing the most costly mode of transportation, air, to transport goods long distances and cost extreme amounts of capital. Geopolitical risks also damage profitability. Issues like political unrest in Egypt and supply chain disruptions due to harbor strikes require contingency plans and may prevent products and services from being completed indefinitely, damaging company reputation and profitability (Read, 2011).

Firms have also recently been exposed to decreasing costs in the U.S. and increasing costs producing in foreign countries, especially in strategic initiatives, transportation, labor, and currency exchange. Companies have begun focusing on lean initiatives and supply chain optimization in the past decade; firms partaking in inventory and logistical analysis have been able to reduce operating costs significantly (Atkins, 2012). Furthermore, employees in the United States have become more productive over time, requiring less capital and time to complete comparable work quality and quantity (Atkins, 2012; Bodamer, 2012; Bodamer & Misonzhnik, 2012). Therefore, labor costs in the United States are declining slightly while increasing dramatically in offshore

locations; Chinese labor costs have increased 15- 20% annually for the past several years due to massive demand for a shortage of skilled employees (Bodamer & Misonzhnik, 2012; Read, 2011; Tate et al., 2012). Companies are able to capitalize on productivity and technological advancements to reduce the cost of operating in the United States, limiting the benefits of offshoring.

Aiding the contraction of the cost gap are rising transportation costs as energy commodity prices ascended dramatically over the past ten years (Bos, 2012). Oil prices have been volatile in the past decade and are expected to rise 20 to 25% by 2015, according to Richard Thompson, the managing director of American supply chain and logistics solutions for Jones Lang LaSalle (Bodamer & Misonzhnik, 2012; Tate et al., 2012). The increase is not a fad, commodity prices are expected to remain high for an extended period of time (Bodamer & Misonzhnik, 2012; Bos, 2012). The effects of increased transportation costs affect most businesses; however, transporting goods from offshore locations typically requires significantly more time and fuel than from domestic facilities, increasing logistics costs exponentially compared to domestic shipments (Bodamer & Misonzhnik, 2012; Bos, 2012).

While companies' offshoring twenty years ago reaped the benefits of low wages and favorable currency exchange rates, these costs have grown significantly for companies sourcing abroad (Atkins, 2012; Bodamer & Misonzhnik, 2012). Consulting firm Werner International released a study in 2009 indicating that labor rates for low-cost-labor countries spans between \$0.31 per hour and \$4.27 per hour in USD, significantly lower than even the minimum wage of \$6.55 to \$7.25 in the United States during the same period (Desi et al., 2012; Saad, 2013). Labor costs in the popular

offshore locations, such as China and India, have increased dramatically recently, as wages have increased in many countries (Bodamer & Misonzhnik, 2012; Read, 2011). Furthermore, experts expect the wages to continue increasing over the next decade, exacerbated by the strengthening of the Yuan and many other currencies compared to the vulnerable USD, declining in value since 1973 (Mallaby & Wethington, 2012; Tate et al., 2012). The Chinese yuan was previously pegged to the U.S. dollar beginning in 1994, undervaluing the official exchange rate by up to 37.5% (Lipman, 2011). However, the pegging system was reformed by the People's Bank of China (PBC) on July 21, 2005 in an attempt to internationalize the currency, reducing the exchange rate between USD and RMB by 13.7% in three years (Schmitt, Ma, & Angounou, 2011). While fluctuations and manipulation by the PBC obfuscate the future of exchange rates, recent currency activity has made paying Chinese wages more costly to U.S. companies in recent years (Schmitt et al., 2011).

The reduction of costs in the U.S. and increased cost of production abroad have facilitated narrowing the cost gap between producing in China and producing in the United States by 50 % between 2004 and 2012 (Jorgenson, 2012). If the trend continues, manufacturing in the United States will become as economical as manufacturing in China by 2015 (Atkins, 2012; Read, 2011; Sirkin et al., 2011; Tate et al., 2012). While other foreign countries have not seen this dramatic change in profitability, increases in wages and transportation costs is not unique to China, and the increased total cost of ownership has caused companies to reshore from numerous foreign locations.

### *LEAD TIME AND FLEXIBILITY*

Another major reason manufacturing companies in particular are deciding to reshore their business processes is due to increased lead times, the latency between order placement and delivery, and the resulting lack of flexibility. When producing nationally, companies often are able to source their products from suppliers quickly and usually at their discretion for mode of transport (Bodamer & Misonzhnik, 2012). However, sourcing abroad increases lead time dramatically while limiting transportation to ocean or air freight options only. In addition to transportation concerns, offshoring's lack of flexibility in a number of areas damages company performance dramatically.

Longer lead times also reduce flexibility in product and inventory management. This is primarily an issue when responding to shortages due to production or quality errors, such as components not meeting specifications or having damaged parts, as well as a result of inaccurate forecasted demand for certain products (Bodamer & Misonzhnik, 2012). The fashion industry, for instance, requires quick response times to customer demand, leading researchers to suggest the purely-offshored sourcing strategy is too rigid for the industry (Desai et al., 2012; Nichols, 2012). As mentioned previously, companies must hold additional safety stock to offset potential product shortages, limiting company competitive advantages and strategic and cost-saving techniques like just-in-time and lean systems (Desai et al., 2012). Holding additional stock limits flexibility by mandating companies to commit to certain levels of specific stock keeping units considerably in advance to the period of peak demand, decreasing space and budget to adapt to unforeseen fluctuations in demand (Bodamer & Misonzhnik, 2012; Desai et al., 2012). In

conclusion, offshoring reduces firms' transportation options, strategic capabilities, and abilities to react to unforeseen circumstances.

#### *INTELLECTUAL PROPERTY*

Research by the U.S. Commerce Department suggests that Americans received 40 percent of worldwide intellectual property payments in 2010, making the issue of protecting the nearly \$100 billion dollars in payments an important issue to U.S. citizens (Gordon, 2012). While all companies must remain attentive of property management, firms offshoring must be particularly wary of their proprietary information and control of physical products when sourcing in foreign locations. The lack of personal property protection is rampant in many locations, such as Turkey and China, representations of the most lax countries globally when considering intellectual property law enforcement (Ross, 2012; Tate et al., 2012). Particularly for highly-technical and pharmaceuticals industries, protecting intellectual property is a primary reason to reshore production; numerous companies producing in Asia found their products copied and marketed by competing corporations within two years (Bodamer & Misonzhnik, 2012; Read, 2011). The pervasiveness of violations of property laws, lack of intellectual property legislation, and government inactivity to enforce existing laws in numerous offshore locations makes sourcing internationally much riskier than producing in the United States (Read, 2011; Ross, 2012). Additionally, adding additional protection to prevent property losses and the revenue damages from competitors selling companies' products and information may significantly damage the bottom-line, reducing the profitability of offshoring.

*QUALITY STANDARDS*

Offshored locations often do not produce products to the same standards compulsory for U.S. consumption. For example, companies like Pigtronix suffered from a nearly 30% defect rate from Chinese production before deciding to reshore to New York where the firm could monitor quality standards more easily (Rocks & Leiber, 2012). More serious in nature, numerous products produced for American companies in Asia have been recalled for toxic elements like lead paint, including children's toys, pet food, and seafood (Bodamer & Misonzhnik, 2012; Read, 2011; Tate et al., 2012). Not only do these quality issues diminish net income through lost revenue and resources utilized to recall products, but quality scares damage brand equity and customer lifetime value significantly; patrons may avoid certain brands ad infinitum.

*MARKETING AND PUBLIC RELATIONS*

Production location has gained publicity lately as job-creation and nationalism has become prevalent in the media. Products boasting a “Made in the USA” label garner brand equity and consumer sentiment from customers, a valuable commodity in the oversaturated U.S. market (Rocks & Leiber, 2012). Critics of offshoring publicly laud companies “bringing work back to the United States” with the pretense that these firms are creating jobs and boosting the American economy (Should manufacturing, 2012). While these claims have not substantiated and many criticize the types of jobs these firms create, the publicity and effect on public relations attracts numerous companies (Should manufacturing, 2012).

### *COMMUNICATION BARRIERS*

Communication barriers between domestic and foreign employees exist in a number of areas, including language differences, time zone scheduling issues, and difficulty navigating meaning and culture. More successful businesses chose offshore locations that offer similar cultural dimensions, accents, and language prominence, such as the Philippines (Read, 2011). However, a majority of businesses suffer from cultural gaps and language barriers that prevent messages from being communicated clearly, resulting in order errors (Gasparro, 2009).

Time zone differences impede communication further with offshore facilities. Companies are much more productive when able to communicate with employees on the same time and work day schedules (Tate et al., 2012). Companies producing in North America are separated by at most four time zones, while sourcing half way around the world requires special planning to facilitate communication timing (Gasparro, 2009; Rocks & Leiber, 2012).

Furthermore, language and cultural barriers impede communication drastically. Managers are ineffective if they cannot communicate meaning to employees, impossible if the two are speaking different languages. Even when both parties speak the same language, local idiosyncrasies, colloquialisms, and other cultural dimensions impede shared meaning across groups (Gasparro, 2009; Rocks & Leiber, 2012).

Some firms have decided to reshore in order to nurture relationships with their customers. Companies found that personal relationships, much easier to cultivate with domestic suppliers with easier methods of face-to-face communication, allow them special considerations (Zelinski, 2010). Vendors offer preferred service, payment terms,

and other benefits to companies with whom they have individual relationships (Zelinski, 2010). The desire for personal relationships with suppliers and customers is driving firms back to U.S. facilities.

## VIABILITY

Experts are torn on the viability of the onshoring trend in America. While most researchers insist that onshoring is a current trend with growth potential, some believe reshoring will not become a sustainable trend in the United States due to high domestic costs, infrastructure and labor inadequacies, and overstated positive ramifications of onshoring (Read, 2011; Segarra, 2012; Tate et al., 2012).

Despite the total landed cost difference between manufacturing in China and producing in the U.S. shrinking annually, other offshore locations in emerging economies, like Central America and Vietnam, still offer large savings (Jorgenson, 2012; Tate et al., 2012). Additionally, researchers suggest that the onshoring movement has been bolstered by poor economic conditions within in the United States (Read, 2011). As the economy recovers, the cost of labor and production in America may increase to unsustainable levels for companies producing domestically.

Despite the potential for production to return to the United States, reshoring may not be feasible due to a lack of preparation. As stated previously, there may be a lack of skilled employees capable of performing the types of positions potentially returning to America. Furthermore, U.S. infrastructure is not poised to bolster more production (Tate et al., 2012). The interstate road system requires capital investment to improve in the coming years, but improvements have only just been proposed by the government (Bodamer, 2012; Tate et al., 2012). Also, there are not enough existing facilities to

accommodate returning manufacturing, even when considering retrofitting abandoned locations for future use (Tate et al., 2012). Despite the possibility of reshoring, the lack of adequate infrastructure may halt progress.

Additionally, some researchers believe that the reasons for and positive effects resulting from onshoring have been overstated and will not result in a reshoring trend. Studies completed by the Hackett Group indicate that the offshoring trend will abate, but only because they are incapable of offshoring any additional, high-level positions and therefore have no effect on onshoring production (Segarra, 2012). Also, many benefits available to companies considering onshoring, such as similar time zones and reduced transportation time, also benefit firms considering nearshoring to Mexico or Canada. While onshoring offers many benefits, some doubt its long-term viability.

Despite the reasons onshoring may not become widespread, most researchers believe the trend is viable due to the significant reasons companies should partake in the strategy. However, additional research into profitability of the trend is necessary to confirm the potential benefits of onshoring.

## METHODS AND RESULTS

### **ARCHIVAL DATA COLLECTION**

Companies participating in the onshoring phenomenon were found using popular press articles and academic journals containing interviews with onshoring companies and leaders of onshoring initiatives. The sample consisted of 38 publicly traded companies that had onshored a business process within between 2004 and 2013 (Table 1: Company Demographics). All data was collected and assembled from the most recently updated Income Statements and Balance Sheets as reported for each individual company through

Thompson One Analytics; First Call and Hoover's SEC Filings. All financial figures are annual data reported in millions of dollars USD. The year of onshoring is considered the annual period in which a company made initial investment in onshoring, including signing lease agreements, construction on a facility, or physical movement of a business process. Onshoring investment year data was collected from company financial statements and interviews with company representatives published in business popular press articles and cited in the Works Cited portion of this manuscript.

## **METHODOLOGY**

### *DATA*

Data was analyzed by filtering financial measures into relevant figures and calculating the averages of each measure for each company before and after the firm's individual year of onshoring. Averages were calculated using data from three years before the act of onshoring to determine the "Before Average" and three years after the act of onshoring to calculate the "After Average." In the case that data was not available a full three years before the onshoring act, all data available was considered for the "Before Average," while the "After Average" still contained three years of data. This is also true for the reverse. Of the 76 average periods considered, 14% contained one year of data, 11% consisted of two years of data, and 75% contained a full three years of data.

Data was then adjusted for industry averages. This was completed by filtering data into the relevant financial measure being considered. Firms were then filtered based upon the first two digits of the company classification code of the North American Industry Classification System into eight major industry sectors: Administrative and Support; Finance and Insurance; Information; Manufacturing; Professional, Technical,

and Scientific Services; Retail; Transportation and Warehousing; and Utilities. The average of each “Before Average” and “After Average” was then calculated for each major industry sector. The major industry sector average was then subtracted from each relevant measure for each individual company to determine the industry average adjusted “Before Average” and “After Average.”

Inventory turnover and cash-to-cash cycle were calculated from “Before Averages” and “After Averages” of inventory, cost of goods sold, accounts receivable, and accounts payable.

#### *ANALYSIS*

The pre and post onshoring financial measures were then evaluated and compared using paired two sample t-tests. This statistical measure was chosen due to the small sample size (30 observations). Tests containing less than 30 observations approximate normal distribution and variance. A paired, or repeated measures, test was chosen due to the evaluation of the same financial measures before and after the onshoring event to conclude if the two sets of financial data differ from each other significantly. An alpha level of 0.05 was utilized as the level of significance, representing a confidence level of 95%.

Due to the small sample size, data was extremely sensitive to large deviations from the mean. Outliers were determined and removed through conditional formatting measures. Outliers were verified through use of formulas to highlight industry-adjusted before and after averages for every firm in each financial measure to find data points more than three standard deviations above or below the mean. Firms containing outliers were then removed from the data set and tests were rerun.

## HYPOTHESES

***HYPOTHESIS 1: Onshoring is negatively related to inventory***

The act of onshoring is hypothesized to drastically decrease the amount of inventory and therefore inventory costs for companies involved. It is hypothesized that onshoring will reduce lead time, therefore reducing the amount of on-hand inventory necessary to meet demand during the lead time. It should also reduce the amount of in-transit inventory, and thusly inventory costs due to damage, shrinkage, and obsolescence during significantly longer lead times when sourcing abroad.

***HYPOTHESIS 2: Onshoring is positively related to inventory turnover***

Inventory turnover, a ratio calculated by dividing the cost of goods sold by average annual inventory, displays the number of times a company's inventory is sold and replaced per annum. This ratio is expected to increase after onshoring due to similar reasons responsible for the decrease in capital tied-up in inventory and related costs. This ratio contains average inventory listed above in the denominator of the calculation, and should have an inverse relationship with average inventory.

***HYPOTHESIS 3: Onshoring is negatively related to cash-to-cash cycle***

The cash-to-cash cycle, the measure of how well a firm is managing its capital, primarily utilizes inventory, accounts payable, and accounts receivable to determine the length of time a company's working capital is illiquid between paying suppliers and receiving payment from customers. Decreasing a firm's cash-to-cash cycle, or cash conversion cycle, increases capital efficiency within an organization. It is hypothesized that onshoring will significantly reduce the cycle due to the decrease in capital tied up in inventory previously discussed, as well as the increase in ability to communicate with

suppliers and facilitate payment within the same currency when engaging in business with domestic suppliers as opposed to foreign business entities.

***HYPOTHESIS 4: Onshoring is positively related to return on assets***

Return on assets is a ratio measure of profitability determining the net income generated from invested capital, i.e. the efficiency at which a firm creates earnings from assets. As inventory has an inverse relationship with ROA, it is hypothesized that the return on assets will increase as inventory assets and expenditures decrease. This is also a result of the increase in net income expected after onshoring due to further cost reductions as companies consider total cost of ownership. Revenue will also increase this financial measure due to upward trends produced by positive consumer sentiment toward nationalism and buying habits surrounding products “Made in America.” ROA is hypothesized to increase as a result of onshoring’s effects on revenue and expenditures.

***HYPOTHESIS 5: Onshoring is positively related to revenue growth***

Revenue and revenue growth measure the level of sales and percentage change in sales from the previous year, respectively. Onshoring should increase the sales levels as a result of the positive marketing and public relations measures discussed earlier. Numerous consumers in the United States value the “Made in America” and job-creation sentiment; producing domestically should lead to increased sales through increased brand perception. Additionally, companies that onshore should be more flexible to changes in demand and trends due to shorter lead times and facilitated communication, allowing them to adjust product offerings dependent upon customer needs more easily. This should also increase the amount of sales and revenue generation in onshoring companies, leading to positive revenue growth.

## RESULTS

Hypothesis 1: The data supports the hypothesis that onshoring decreases capital invested in inventory and related expenditures. The inventory paired two sample t-test for all onshoring companies was analyzed using 29 observations with 28 degrees of freedom. The results conclude that the two-tail p-value of 0.000 is less than .05, which leads to the ability to reject the null hypothesis that the means before and after onshoring are equal (Table 2: Results). Because measures are industry-adjusted, negative inventory means indicate that the significant inventory differences were lower than industry standard. Means decreased from -698 to -1373. Therefore, with a 95% confidence level there is a statistically significant difference in the inventory held by companies before onshoring and after onshoring. Due to the significantly lower inventory mean before and after onshoring, companies experienced significantly lower inventory costs after engaging in the onshoring trend.

Hypothesis 2: The data supports the hypothesis that onshoring increases the number of inventory turns (Table 2: Results). The inventory turnover paired two sample t-test was analyzed using 29 observations with 28 degrees of freedom. The results conclude that the two-tail p-value of 0.000 is less than .05, indicating an ability to reject the null hypothesis that the means before and after onshoring are equal. Means before and after onshoring increased from -3.11 to -1.57. Therefore, with a 95% confidence level and higher mean after onshoring, there is evidence that inventory turnover increased after companies participated in the onshoring trend.

Hypothesis 3: The data does not support the hypothesis that onshoring decreased the cash-to-cash cycle. The paired two sample t-test was analyzed using 25 observations

with 24 degrees of freedom. The results conclude that the two-tail p-value of 0.138 is greater than .05, requiring a failure to reject the null hypothesis that the means before and after onshoring are equal (Table 2: Results). Means increased from 54.8 to 74.5 after onshoring, indicating an insignificant but increased cash-to-cash cycle that differs from the hypothesized results. Therefore, there was no significant increase in the cash conversion cycle after companies onshored; equal means between the samples are plausible.

Hypothesis 4: Analysis does not support the hypothesis that onshoring results in higher return on assets. The paired two sample t-test was analyzed using 33 observations with 32 degrees of freedom. The results conclude that the two-tail p-value of 0.078 is greater than .05, requiring a failure to reject the null hypothesis that the means before and after onshoring are equal (Table 2: Results). The mean after onshoring decreased from 7.1 to 4.1, indicating that return on assets decreased insignificantly as opposed to the hypothesized increase.

Hypothesis 5: Analysis does not support the hypothesis that onshoring results in higher revenue growth. The paired two sample t-test was analyzed using 30 observations with 29 degrees of freedom. The results conclude that the two-tail p-value of 0.104 is greater than .05, prohibiting rejection the null hypothesis that the means before and after onshoring are equal (Table 2: Results). However, a larger mean after onshoring indicates revenue growth increased, albeit insignificantly.

## DISCUSSION OF RESULTS

### **CONCLUSION OF HYPOTHESES**

As expected, average inventory assets decreased and inventory turnover increased. Inventory is the primary measure expected to change as a result of onshoring, as the act benefits firms immediately and in numerous manners. Decreasing inventory decreases capital dedicated to the assets; diminishes shrinkage, theft, and obsolescence costs; and increases company flexibility. Inventory is expected to be the first and most obvious indication of onshoring having significant effect on companies' financial information, and this hypothesis was clearly supported by evidence in this study.

A variety of causes may have resulted in the failure to confirm the three additional hypotheses. The difference in growth average means before and after onshoring is likely due to lagging results of the public relations effect, as well as and the financial collapse of 2008 decreasing sales across all industries and firms regardless of sourcing strategy.

Cash-to-cash cycle and return on assets are both complex measures calculated from several additional financial measures. Insignificant differences in means for composite measures accounts payable and cost of goods sold may obfuscate results, despite significant differences in accounts receivable. Furthermore, cost of goods sold decreased and accounts receivable increased, reflecting positive changes after onshoring. However, accounts payable also increased, reducing the positive impact of the other composite measures.

Additionally, some measures may not reflect the effect of onshoring due to lagging effects of the new phenomenon. While inventory is often affected immediately, onshoring may require large, singular expenditures and investments that obscure the

effect on measures like net income, and therefore return on assets. These lagging measures were likely the cause of decreased net income means and increased assets means, although the results of the differences were insignificant. That is, onshoring may require significant human resources costs to hire numerous new candidates for onshored positions; this cost may affect results, but does not appear in analysis examined here except to negate annual cost savings from appearing in net income measures.

Furthermore, the insignificant revenue growth results may indicate that the marketing angle of onshoring either lags or is irrelevant to consumers. The mean after onshoring did increase, indicating that revenue growth may be a significant factor in the future, but is currently unaffected by onshoring. Consumers may not appreciate the “Made in America” stigma more than increased prices, demonstrating that customers purchase with their wallets first. The results could also indicate that customers have simply not adapted to the onshoring trend yet and are not aware of the change, and revenue growth will increase more in the future due to this phenomenon.

## LIMITATIONS

While media outlets, academic journals, and reshoring initiatives have publicized well over 200 companies participating in the reshoring movement, a majority of these companies are small, private firms. This limits the success of the study in two ways. Primarily, this reduces the sample size to 40 publicly-traded companies, as the private firms will not release financial information. Of these companies, several had yet to report financial data after they onshored business processes; this eliminated three companies that engaged in onshoring business processes in 2012 and 2013. This overall sample size

of 37 and smaller may not have the statistical power to reveal financial changes between offshoring and onshoring in some areas.

Furthermore, the lack of information from private firm limits the generalizability of the study. The results of this study only apply to publicly-traded firms, and thusly does not account for the impact of private firms on the economy.

The small number of firms also impeded segmentation for further analysis. While this study initially intended to determine if contextual company factors, such as industry and from which country the firm onshored, resulted in greater financial success due to onshoring, the initial sample is too small to credibly segment data further. The study also initially attempted to determine the financial effects of nearshoring in comparison to onshoring. However, only four firms participated in nearshoring; the sample size is too small to depict meaningful conclusions.

Additionally, the onshoring movement is quite novel, and in many cases firms have not begun to see the financial results of this movement. All companies have onshored within the last ten years, with a majority onshoring in the past five years. This reduces the financial impact of the movement drastically, as these measures lag.

A final limitation is that the publically reported data is at the corporate level while onshoring decisions normally occur at the business unit level. For example, Otis Elevator was the only business unit within United Technologies to participate in onshoring. The effects of the strategy in the multi-business corporation may be attenuated by the other businesses in the corporation that did not onshore.

## NEXT STEPS AND FUTURE STUDIES

### *FUTURE STUDIES*

The onshoring trend has many possibilities for future study. Analysis should be completed five, ten, and 20 years in the future to determine the long-term effects of reshoring on financial data. This would account for the lag in financial measures and provide time for more companies to join the trend, increasing available data and sample size.

Further studies could also be completed to determine the effect of onshoring on public sentiment. While financial data is a primary decision heuristic for numerous managers and owners, public sentiment and other factors may influence sourcing strategy decisions as well. These studies could be utilized to determine possible connections between onshoring on brand equity, as well as the eventual financial results. This would determine if there is a tangible connection between revenue growth and the marketing effects on onshoring.

Finally, additional studies may determine the effects of nearshoring. These studies could determine if firms engaged in the nearshoring trend have greater financial success after the move, and if nearshoring has more financial benefit than onshoring. All of these potential studies would provide greater insight on the future of sourcing strategies for U.S. companies. More information on this subject would allow the government, citizens, and companies prepare more effectively for sourcing trends.

### *NEARSHORING*

While not well-represented in this study, companies engaging in the nearshoring trend are of significant interest to the business community and deserve analytical

evaluation. Nearshoring may be a more profitable alternative to offshoring or onshoring policies; it allows companies to capitalize on the benefits from both sourcing strategies without the added risk of onshoring.

Nearshoring allows companies to take advantage of shorter distances between management and the actual processing of the good or service lauded by companies onshoring. Proximity to manufacturing decreases the cost and time of transportation; it allows shorter lead times and an ability to complete expedited orders, as well as all of the benefits of increased flexibility and JIT procurement policies. It also allows managers to spend less times travelling between foreign locations and their domestic offices. The reduced distance reduces companies' invested time and capital.

Additionally, nearshoring reduces supply chain complexity and stress. Customs and norms in proximate areas are often more similar to a country's than customs in a country farther away; closer distance reduces the liability of foreignness. There is also a decreased risk of language barriers creating communication difficulties. For example, it is more likely a company headquartered in Texas has employees fluent in Spanish than Chinese. Also, nearshoring allows companies to capitalize on similar time zones, making communication and issue resolution faster and easier. Nearshoring results in decreased complexity of communication.

Finally, nearshoring allows companies to take advantage of the benefits of offshoring, included lower labor costs and larger workforce with available skills. Countries like Mexico still pay significantly lower wages to the labor force than labor rates in the United States. Also, proximate countries do not suffer from the lack of labor force with the necessary skills as the United States does. Firms engaged in nearshoring

can circumvent the risks and costs associated with producing in foreign locations while benefitting from the advantages, making this strategy attractive and worth studying from an analytical perspective in the future.

### IMPLICATIONS

This manuscript and the results of the analysis it contains have numerous implications on business, citizens, government in the United States.

#### **BUSINESSES**

While all companies may not benefit from onshoring or nearshoring, this study draws attention to the numerous costs associated sourcing strategy often overlooked by business owners and managers. Firms should use this manuscript to consider their total cost of ownership and current sourcing strategy to determine if there are business areas within their firms with significant cost-saving opportunities. The significant effects of onshoring on inventory financial measures proves that changing sourcing strategy can have immediate financial consequences on the overall profitability and flexibility of a firm. The document also draws attention to the results of all supply chain partners' sourcing decisions; companies should consider the possibility of their inventory-driven suppliers and other partners' sourcing strategy changes. If firms' partners decide to onshore a process in order to reduce capital invested in inventory, the partner may see significant cost savings and shorter lead times, indicating an opportunity for firms to renegotiate price and distribution contracts and arrangements.

The study also illuminates the industries most likely to participate in onshoring. The majority, 54%, of all companies identified as onshoring or nearshoring were manufacturing firms. This indicates that businesses competing in this industry or

partnered with manufacturing firms should prepare more extensively for the possibility of an onshoring trend than firms in other industries.

The results of this study particularly affect firms that require significant amounts of inventory or serve consumers whom are particularly susceptible to trends and fads, such as the fashion and consumer electronics industries. Businesses that require constant inventory analysis and updates depending upon consumer preference and new technology developments would be particularly sensitive to the benefits of an onshoring or nearshoring strategy. In these cases, management in these industries should consider re-evaluating their firms' sourcing strategies and lead times to determine if onshoring could save them significant capital or allow greater operating adaptability.

Finally, the document implies that firms should consider investing in a skilled work force or long-term assets in domestic locations. While the study does not confirm that onshoring will become a widespread trend, it demonstrates that significant cost savings are possible through this strategy. The results indicate that a vibrant future of onshoring in the United States is possible, and companies should consider preparing for fluctuating labor sources and production locations.

## **GOVERNMENT AND CITIZENS**

The study indicates that significant cost savings are possible for companies participating in the onshoring trend, although these companies may not immediately benefit from significant effects on measures of overall profitability, such as net income. This indicates that government incitement to encourage onshoring, if determined to be a worthwhile investment for national funds, should focus on decreasing initial outlay costs of moving production and service domestically, such as offering one-time tax breaks.

However, the cost reduction possibilities resulting from onshoring indicate that government monetary support is unnecessary for firms choosing to participate in the trend; however, more data spanning additional years is necessary to make substantial claims toward the overall profitability of the phenomenon.

Citizens may benefit from the results of the study by preparing for the possibility of job creation in the United States. The analysis demonstrates that onshoring has the potential to be a viable strategy, and citizens should consider preparing for this possibility by building necessary skills for the type of labor required.

### CONCLUSION

Onshoring, the act of moving production or labor source from an offshore location back to a nation's territory, has become an emerging phenomenon in the U.S. over the past several years. This manuscript has attempted to isolate financial fluctuations in companies participating in the trend's performance in order to determine if this strategy has been financially beneficial for the U.S. firms involved.

There are numerous reasons onshoring has begun to develop as a new trend in the United States, primarily surrounding firms' misunderstanding of their total cost of ownerships. Numerous companies do not consider the total landed cost of all of their management decisions when determining sourcing strategy, resulting in dissatisfaction with current foreign procurement activities. Additionally, onshoring reduces the amount of lead time required to produce products abroad, consequently reducing the amount of capital invested in inventory and transportation. The decrease in lead time also allows firms to enjoy more flexibility and adaptability to performance inhibitors. Onshoring also reduces communication barriers between companies involved in a business transaction.

This is accomplished through a reduction of language and time-zone barriers while increasing the possibility of cultural affinities that increase nonverbal and indirect communication. Better communication and management typically results in higher quality products, and producing in the United States typically results in fewer nonconforming parts or misbehaving employees. Furthermore, onshoring affords companies a reduction in black market and grey market activity, as the United States has more stringent and enforced private property laws. All of these benefits result in a more efficient firm, which combined with the prospect of creating American jobs leads to increased brand equity and possibly higher sales in the United States. All of these benefits entice businesses to consider onshoring or nearshoring business processes to the United States.

This manuscript posed five hypotheses surrounding the specific question of the financial profitability of firms engaged in the onshoring strategy to determine if the onshoring will become a widespread trend in the United States. These hypotheses were evaluated by compiling financial data from 40 companies that have participated in the onshoring trend within the last ten years. The companies specific financial measures were then averaged, adjusted for industry-wide trends, isolated from outliers, and analyzed before and after the onshoring act.

The consequences of the analysis imply that inventory measures were significantly affected in a beneficial manner by onshoring, while other measures of financial profitability are inconclusive. This is likely the result of the numerous limitations of the study, such as the small sample size and novelty of the onshoring trend.

Despite the limitations, the results of the study indicate that onshoring has the possibility to become a more widespread trend within the United States. While the outlook is uncertain, businesses, government agencies, and individuals should prepare for the possibility of a changing workforce and common sourcing strategies within the United States in future years.

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## APPENDIX

**Table 1: Company Demographics**

Company Name	NAICS Code	Industry	Industry Sector
3M Co	325520	Specialty Chemical Manufacturing	Manufacturing
Amazon	454111	Internet and Mail Order Retail	Retail
AT&T	517110	Telecommunications Services	Information
Automatic Data Processing	561330	Professional Employer Organization	Administrative and Support
Boeing Company	336411	Aerospace Products and Parts Manufacturing	Manufacturing
Capital One	522210	Credit Cards	Finance and Insurance
Carlisle Companies	221310	Water Distribution	Utilities
Caterpillar Incorporated	333120	Construction Machine Manufacturing	Manufacturing
Ciber	541512	Information Technology Services	Professional, Technical, Scientific Services
Dell	334111	Personal Computer Manufacturing	Manufacturing
Delta	481111	Airline	Transportation and Warehousing
Dow Chemical	325211	Plastics Material and Resin Manufacturing (primary)	Manufacturing
Emerson	335999	Industrial Control Products Manufacturing	Manufacturing
Expedia	561510	Travel Agencies and Services	Administrative and Support
ExpressJet Airlines	481111	Airline	Transportation and Warehousing
Faucia	336111	Automotive Manufacturing	Manufacturing
Ford	336111	Automotive Manufacturing	Manufacturing
General Electric	335999	Lighting Consumer Products	Manufacturing
Hewlett Packard	334111	Personal Computer Manufacturing	Manufacturing
Home Shopping Network	454113	Nonstore Retail	Retail
IBM	541512	Information Technology Services	Professional, Technical, Scientific Services
Lenovo	334111	Electronic Computer Manufacturing	Manufacturing
Master Lock LLC	321911	Consumer Productrs Manufacturing	Manufacturing
Microsoft	511210	Development Tools, Operating Systems and Utilities Software	Information
Monster Worldwide	541410	Online Staffing and Recruitment	Professional, Technical, Scientific Services
NCR	334118	Self-Service Terminal Manufacturing	Manufacturing
Otis Elevator	333921	Machinery Manufacturing	Manufacturing
Priceline.com Inc	561510	Travel Agencies and Services	Administrative and Support
Sallie Mae	522291	Consumer Lending	Finance and Insurance
Seesmart Inc	335121	Lighting Equipment Manufacturing	Manufacturing
Stanley Furniture	337122	Furniture Manufacturing	Manufacturing
Tesla Motors Inc	336111	Automotive Manufacturing	Manufacturing
TriMas Corp	336339	Automobile Parts Manufacturing	Manufacturing
Unilife Corporation	339112	Surgical and Medical Instrument Manufacturing	Manufacturing
US Airways Group	481111	Airline	Transportation and Warehousing
Wellcare Health Plans	524114	Health Insurance Carriers	Finance and Insurance
Whirlpool Corporation	335224	Household Appliance Manufacturing	Manufacturing

**Table 2: Results**

Hypothesis	Financial Metric	Before Mean	After Mean	N	P-value (2 Tailed)	Hypothesis Supported
1: Onshoring is negatively related to inventory	Inventory	-698.00	-1373.00	29	0.000	Yes
2: Onshoring is positively related to inventory turnover	Inventory Turnover	-3.11	-1.57	29	0.000	Yes
3: Onshoring is negatively related to cash-to-cash cycle	Cash-to-Cash Cycle	54.80	74.50	25	0.138	No
4: Onshoring is positively related to return on assets	Return on Assets	7.10	4.14	33	0.078	No
5: Onshoring is positively related to revenue growth	Revenue Growth	-6.27	-2.85	30	0.104	No

## ABSTRACT

This study focused on the phenomenon of onshoring and its effects on companies in the United States. Through the study of inventory, inventory turnover, cash-to-cash cycle, return on assets, and revenue growth, this study specifically evaluated the effects of the onshoring sourcing strategy on relevant supply chain measures. This was done to determine if onshoring is financially beneficial for companies involved. This document determines that onshoring is beneficial for firms in terms of inventory measures, but the strategy did not create a significant difference in other measures of profitability. The manuscript then proposes extraneous factors impacting the results of the study. Implications for the future of business and the labor force in America are discussed.