

# OFFSHORING AND RESHORING: AN UPDATE ON THE MANUFACTURING LOCATION DECISION

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This research uses data from a survey to explore the factors that affect organizations' manufacturing location decisions. Manufacturing location, more specifically the possibility of firms nearshoring or reshoring, has received a great deal of recent attention, especially in the United States. This paper applies the location aspect of internalization theory to provide an understanding of what factors affect organizations' perceptions of the attractiveness of various regions as locations for owned manufacturing facilities. An exploratory factor analysis is used to develop factors that drive manufacturing location decisions. Multiple regression analysis is used to test the relationship between the drivers of manufacturing location decisions and movement of manufacturing into or out of a region, and overall perceived risk of a region. Findings indicate that various drivers have differential effects across regions. For example, while North America is viewed favorably for its trade policies over the next 3 years, the trade policies are also viewed as an increasing source of risk, possibly reflecting bipartisan conflicts. Three theoretical propositions are developed to advance the understanding of the current state of manufacturing location decisions from an internalization perspective. It appears that organizations are beginning to look at their manufacturing location decisions through a broader lens, giving more weight to supply chain issues as well as strategic factors.

*Keywords: offshoring; nearshoring; manufacturing location; internalization theory*

## INTRODUCTION

Are manufacturing firms moving back to the United States en masse? What is *really* happening with respect to preferred manufacturing locations globally? This issue has been receiving substantial attention in the popular press and has been the subject of numerous consulting studies. A number of factors have been suggested as drivers of the global manufacturing location decision today. Some of these include:

- The rising cost of fuel and associated transportation costs (Behar & Venables, 2010; Fishman, 2012).

- The rising cost of labor in low-cost countries (Anon, 2012; Fishman, 2012).
- The slowing of the global supply chain due to the shipping industry adoption of slow steaming (Hull, 2005).
- The improving ratio of U.S. labor output/productivity per labor dollar (Anon, 2012; Fishman, 2012).
- The growing concern toward environmental issues (Mueller et al., 2011).
- Real and anticipated volatility in currency valuation (Culp, 2012).
- Increasing theft of intellectual property when dealing in global regions (Clarke, 2012; Riley & Vance, 2012).
- The fast response time and leaner supply chain associated with locating manufacturing closer to the end customer/consumer (Williamson, 2012).

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- Perception of quicker recovery in the case of supply chain disruption (Fishman, 2012; Williamson, 2012).

This research uses the results from a survey administered in August of 2012 to gain a better understanding of the drivers of the manufacturing location decision. It also leverages appropriate theory to improve our understanding of these drivers by addressing the following questions:

- What factors have the most influence on manufacturing location decisions for various regions, and which regions are viewed favorably and unfavorably?
- What factors are seen as important drivers of risk perceptions in various regions across the globe?

For this study, the manufacturing location decision is focused on owned manufacturing facilities. Offshoring refers to the locating of a manufacturing facility outside of the company's headquarters region, whereas nearshoring refers to locating a manufacturing plant within one's region.

After a brief presentation of relevant theory and the research method, results are presented. As a part of this discussion, implications are drawn for the relative riskiness of each of these regions, across a number of drivers of risk. Finally, this work suggests several research propositions as well as several areas for possible future research.

## UNDERPINNING THEORY

There are many theoretical perspectives that may inform the manufacturing location decision. Transaction cost economics (TCE), which focuses on the make-or-buy decision, attempts to balance the costs of market friction (transactions) and specific asset investments with the potential risk of buying the item rather than making it (Williamson, 2008). TCE suggests that individual firms will tend to move away from higher cost to lower cost regions, all else being equal. In addition, areas with greater cultural differences or limited intellectual property protection may create a high potential for opportunism and will also be less attractive (McIvor, 2013).

Internalization theory also considers the make-or-buy decision and is grounded in the work of Coase (1937). However, it views the manufacturing location decision from a global, macro level, as affected by a host of cost and risk-related factors, including foreign direct investment (Casson, 2013). The international business literature reminds us that "...the critical choice of a multi-activity firm is whether it should internalize its intermediate product markets within its home country or in a foreign country; and that the

outcome of this choice is primarily determined by the costs and benefits of adding value to these products in the two locations" (Dunning, 1998, p. 45).

In his eclectic theory of international production, Dunning (1980, 1988, 1998) proposed three determinants of international production by multinational enterprises (MNE's): *ownership advantages*, *location advantages*, and *internalization advantages*. This theory is employed in the economics and international business literature to provide insight into foreign direct investment decisions (FDI) (Dunning, 1988; Rugman, 2010). As this discussion forum focuses specifically on the manufacturing location decision, the *location advantages* suggested in the eclectic theory of international production is the focus of this research. Gray, Skowronski, Esenduran, and Rungtusanatham (2013), in their review of the location literature from several disciplines, assert that "reshoring is fundamentally a location decision."

The eclectic theory will be leveraged to gain insight from offshoring data gathered from an empirical survey. The businesses that responded to this survey owned offshore manufacturing facilities and thus had internalized their manufacturing operations. While ownership or internalization issues were not considered in this study, the make-or-buy aspect of reshoring is discussed by McIvor (2013). In addition, ownership and internalization are very closely related and focus on a firm-level analysis. On the other hand, location advantages can be explained by country-level analysis (Rugman, 2010). Unlike Gray et al. (2013), this paper does not include the "sourcing" aspect of reshoring, only manufacturing. The focus on location advantages is further justified by the fact that Dunning (1996, 1998) notes that the location decision is often a neglected factor in MNEs.

Within the broad category of location advantage, Dunning (1980) identifies several types of advantage, including:

- Resource-based advantage: concerns the possession of resources in certain regions.
- Import-substituting manufacturing advantage: includes (a) material cost, (b) labor cost, and (c) market and government trade policies.
- Export Platform Manufacturing advantage: considers low labor cost incentives provided by host governments for local production.
- Trade and distribution advantage: involves improved market access through closer proximity to customers.

When Dunning tested this theory in 1980, he found that relative market size and average hourly wages were the most influential indicators of the manufacturing location decision. In 1998, Dunning revised his

eclectic theory of international production, recombining, enhancing, and replacing the four factors above with the four factors below. The new factors are as follows:

- Resource seeking advantage: still concerns availability of raw materials and infrastructure, but now local partners are also seen as important resources.
- Marketing seeking advantage: concerns the availability and cost of local talent and suppliers, access to domestic markets in a region (including users in knowledge-intensive industries) and government economic policies.
- Efficiency seeking advantage: combines both production cost-related factors, specialized industry clusters, and government removal of trade barriers.
- Strategic asset seeking advantage: considers knowledge related assets, and synergies related to maintaining a local presence. For instance, gaining localized tacit knowledge, access to understanding of market and consumer patterns, and intangible and tangible synergy in general.

Dunning's revision of his theory reflects the trends in the manufacturing location research. After a waning interest in the impact of location on the manufacturing decision in the 1970 and 1980s, interest in the location decision has reemerged with a new focus (Cantwell, 2009). Whereas earlier research focused on low labor cost (Porter, 1994) and financial diversification, the shift today is toward new value creation (Buckley & Hashai, 2009; Cantwell, 2009).

Using Dunning's terminology, more recent research on the manufacturing location decision suggests a move away from resource seeking, primarily cost advantage toward strategic asset seeking, or more complementarity of assets and activities (Cantwell, 2009). This includes greater interest in knowledge creation and value creation and capture (Gereffi & Lee, 2012). Alternatively, Mudambi (2008) notes that the location decision is both about controlling costs and leveraging capabilities. Using the global handset industry as an example, he notes that properly configuring the value chain increasingly calls for geographic dispersion of creative activities. Mann (2012), on the other hand, focuses on the increasingly important role of government in trade facilitation reform, as governments specifically try to make their regions more attractive locations for manufacturing. Thus, recent research indicates that there may be changes in the importance of various factors affecting the manufacturing location decision.

## METHODOLOGY

To develop a better understanding of the current stage of reshoring manufacturing to the United States,

data were collected in August 2012 via an electronic survey. The survey was administered by ResearchOne, a professional organization that uses prequalified respondents to achieve necessary response rates for purposes of validity. An initial invitation of 3,303 potential participants with knowledge of manufacturing location decisions was sent. Of those that were contacted, 319 usable surveys were returned, resulting in a conservative estimate of response rate of approximately 9.7 percent. The participants were all part of organizations involved in offshore manufacturing.

The respondents were asked about the factors that influenced their choice of regions for offshore manufacturing in the past 3 years and in the coming 3 years, as well as the overall level of risk associated with each of their offshore manufacturing regions. Based on the responses, it was apparent that the relative importance of the factors that affect the manufacturing location decision changed over time and differed by region. Regional risk was also thought to differ fairly dramatically across the major regions that were included in this study. A principal components exploratory factor analysis was employed to reduce the data into a number of higher-order independent variable factors (see Table 1).

While there is not a perfect alignment, Table 2 maps these higher-order factors onto Dunning's, 1998 categories of advantage in the eclectic theory of international production. *Resource seeking* relates to the Input/Product Factor, which focuses on resource availability and considers foreign direct investment issues, which are marginally related to currency stability. *Market seeking factors* consider both local resource markets as well as sales opportunities. The factors Cost, Labor, and Logistics are all most closely associated with market seeking. *Efficiency seeking*, which focuses on smooth running operations, includes Supply Chain Interruption Risk and Country Risk. Finally, *strategic asset seeking* is allied with the factors Strategic Access and Government Trade Policies.

Multiple ordinary least squares regression was used to regress each independent variable onto two dependent variables. The first dependent variable is the movement of manufacturing into (or out of) the specific region of interest. The second dependent variable is the overall risk associated with that region. Data were gathered for each independent variable's importance in the location decision in the past 3 years as well as its effect in the coming 3 years (see the right column of Table 1). The associated statistic is a standardized beta, and the significance test is the level of significance of that beta using a two-tailed t-test. The regions included are North America, East Asia, India and South Asia, Africa, Central and Eastern Europe, Western Europe, South America, Middle East and Oceania.

TABLE 1

## Drivers of Manufacturing Location Choice: Exploratory Factor Analysis

Factor		Factor Loadings	
		Past 3 Years	Next 3 Years
Input/product	Currency	.750	.505
	Weight	.745	.491
Cost	Raw materials location	.600	.566
	Switching cost	.627	.733
	Labor cost	.751	.579
Labor	Stability of labor cost	.680	.667
	Availability of local management	.559	.807
Logistics	Availability of labor	.321	.778
	Availability of knowledgeable intermediaries	.719	.774
Supply chain interruption risk	Availability of transportation	.788	.794
	Stability of transportation cost	.552	.607
	Transportation reliability	.755	.576
	Distance to customer	.453	.514
Strategic access	Terrorism	.786	.771
	Disaster	.759	.772
	Reputational risk	.625	.325
	Market potential	.692	.610
Country risk	Customer presence	.463	.616
	Access to supplier or buyer knowledge	.610	.653
	Competitive pressure	.466	.533
	Global/political uncertainty	.619	.654
Government trade policies	Environmental issues	.672	.687
	Social/ethical	.575	.576
	Natural disaster	.510	.602
	Political instability	.610	.684
Government trade policies	Regulation risk	.617	.613
	Tax advantages	.756	.729
	Subsidies	.781	.830
	Countertrade requirements	.488	.376

## RESULTS BY REGION

Not surprisingly, the independent variables that influence an organization's decision to manufacture in a given region vary both by region and over time. These factors are discussed in terms of each region.

## North America

There is much discussion regarding movement of manufacturing back to North America. This made the results of the assessment of the data regarding North America of substantial interest. Over the past 3 years, cost had a negative association with the movement of manufacturing to North America ( $\beta = -.22, p = .01$ ), while perceptions of supply chain interruption risk favor North America ( $\beta = .23, p = .03$ ). In the next 3 years, respondents suggested that government trade policies favor manufacturing in North America ( $\beta = .18, p = .01$ ).

When considering the effect of the perceived risk associated with manufacturing in North America over the past 3 years on the movement of manufacturing to North America, Logistics ( $\beta = .25, p = .00$ ) and Strategic Access ( $\beta = .16, p = .05$ ) were considered to be attenuating factors. Interestingly, respondents suggested that the Input/Product ( $\beta = -.15, p = .03$ ), Supply Chain Interruption Risk ( $\beta = -.21, p = .02$ ), and Government Trade Policies ( $\beta = -.19, p = .00$ ) factors were associated with an improved risk profile in North America. These cut across all of the categories of factors noted by Dunning (1998) to influence the location decisions. On the other hand, perceptions of risk about what will happen in the next 3 years associated with Supply Chain Interruption Risk ( $\beta = .25, p = .00$ ) and Government Trade Policies ( $\beta = .19, p = .00$ ) negatively affect the attractiveness of moving manufacturing to North America. These

TABLE 2

Relationship Between Eclectic Theory and Offshoring Survey Constructs	
Eclectic Theory of International Production	Offshoring Study Constructs
Resource seeking advantage	Input/product
Market seeking advantage	Cost Labor Logistics
Efficiency seeking advantage	Supply chain interruption risk Country risk
Strategic asset seeking advantage	Strategic access Government trade policies

factors are most closely aligned with Dunning's efficiency and strategic asset advantages. Perhaps, the unfavorable view of the risk associated with Government Trade Policies in North America will shift during President Obama's second term. The state of uncertainty regarding tax and trade policies has been making businesses wary of long-term commitments, hiring, and other investments (Davis & Stohlberg, 2012).

#### East Asia

Moving next to East Asia, perceptions related to Labor Availability ( $\beta = -.17, p = .04$ ) in the past 3 years have reduced the attractiveness of moving to East Asia as a manufacturing location today. Past 3 year perceptions of risk of Input/Product helped East Asia ( $\beta = -.15, p = .03$ ), while it was hurt by risk perceptions associated with Logistics factors ( $p = .04$ ). For the next 3 years, perceptions of supply chain interruption risk ( $\beta = .25, p = .00$ ) are impeding the attractiveness of East Asian regions as a manufacturing location.

#### India and South Asia

There were no location factors significantly affecting movement to India as a manufacturing location. However, the availability of local management and labor, included in the Labor factor, is viewed as a significant risk factor in India in the next 3 years ( $\beta = .15, p = .05$ ), unfavorably affecting participants' assessment of India as a manufacturing location.

Turning to South Asia, there were no independent variables that significantly affected the way it is viewed for movement of manufacturing in the past 3 years. However, in the next 3 years, views of both Cost

( $\beta = .21, p = .02$ ) and Government Trade Policies ( $\beta = .20, p = .01$ ) are increasing its appeal for movement of manufacturing to this region. Past 3 year perceptions of risk associated with Logistics factors ( $\beta = .16, p = .05$ ) hurt South Asia as a manufacturing location choice. Views about South Asia's risk associated with Supply Chain Interruption in the next 3 years ( $\beta = .28, p = .00$ ) are also reducing its attractiveness as a manufacturing location. Thus, there are definitely common concerns associated with logistics cost and availability in South Asia, as well as some concerns associated with supply interruption risk. In the eclectic theory, Cost represents a marketing seeking advantage, whereas logistics is an efficiency seeking advantage.

#### Africa

Africa was viewed as one of the highest risk countries by survey respondents. Perceptions of Input/Product factors in the next 3 years are helping the way that Africa is viewed for movement of manufacturing ( $\beta = .28, p = .05$ ). While past 3 year Supply Chain Interruption Risk actually helped the way that Africa is viewed as a manufacturing location choice, ( $\beta = -.23, p = .01$ ), next 3 year views of Supply Chain Interruption Risk hurt Africa's attraction as a manufacturing location choice ( $\beta = .28, p = .00$ ). One explanation for the shift in this efficiency seeking factor is that in the past 3 years, the possibility of manufacturing in Africa and reaching its growing middle class made it more attractive. But as things have played out, it continues to be a very difficult operating environment with many human rights violations and considerable terrorism and piracy.

#### Central and Eastern Europe

For Central and Eastern Europe, its manufacturing attractiveness was boosted by a favorable view of Cost ( $\beta = .19, p = .04$ ) and Government Trade Policies ( $\beta = .18, p = .03$ ) in the next 3 years. However, perceived risk associated with the availability of local management and labor in the next 3 years is reducing its attractiveness for movement of manufacturing. There were no significant location factors associated with manufacturing in Central and Eastern Europe. From a risk standpoint, the view of Availability of Labor shifted from a positive risk factor ( $\beta = -.14, p = .07$ ) affecting the manufacturing location decision in the past 3 years to a negative risk factor ( $\beta = .21, p = .01$ ) in the next 3 years. Thus, there is a commonality with the way that all of Europe is viewed as a manufacturing location, with concerns over labor shortages likely due to the aging population.

#### South America

The only significant location factor affecting South America's attractiveness is that Input/Product was

viewed more favorably in the past 3 years. From a risk standpoint, negative perceptions of Supply Chain Interruption Risk in the next 3 years ( $\beta = .18$ ,  $p = .04$ ) reduces the attractiveness of South America for movement of manufacturing.

### Middle East

Like Africa, the Middle East was viewed as a very risky region by survey participants. The Middle East, on the other hand, is seen as differentially attractive because the perceptions associated with favorable Government Trade Policies in the next 3 years ( $\beta = .33$ ,  $p = .00$ ), such as tax advantages, subsidies, and counter trade. From a risk perspective, its attractiveness as a manufacturing location has been hurt by perceptions of high Country Risk in the past 3 years ( $\beta = .18$ ,  $p = .04$ ). The Middle East is also regarded as having a high level of Supply Interruption Risk in the next 3 years ( $\beta = .17$ ,  $p = .05$ ). The concern over supply interruption risk associated with distance to the customer, terrorism, disaster, and reputation risk is a recurring concern for many of the regions studied here. Both of these risks are related to efficiency in eclectic theory.

### Oceania

Somewhat to the researchers' surprise, there were many significant results associated with Oceania, which includes Australia, New Zealand, Papua New Guinea, and surrounding islands. Favorable perceptions of the location factor Supply Interruption Risk in the past 3 years ( $p = .03$ ) and Strategic Access in the next 3 years ( $p = .05$ ) make Oceania more attractive for movement of manufacturing. This is potentially because the area is viewed as having a similar culture and work ethic as the United States; however, it may be perceived as having a relatively more stable government. Oceania had an equal number of significant positive and negative risk factors. In the past 3 years, Input Product ( $p = .02$ ) and Labor Availability ( $p = .04$ ) lower its risk, while Logistics ( $p = .03$ ) and Strategic Access ( $p = .05$ ) increase the risk perceived with manufacturing there. In the next 3 years, some of these factors flip. Logistics ( $p = .04$ ) and Supply Chain Interruption Risk ( $p = .01$ ) are now viewed favorably. But Labor Availability ( $p = .00$ ) is viewed as increasing risk, making Oceania less attractive as a manufacturing location.

## CONCLUSIONS

From the data above, it is clear that location differences are dynamic and important in manufacturing location decisions. Based on the data above, one contribution of this research is to develop a number of propositions that are underpinned by

the eclectic theory of international production and support an improved understanding of how this theoretical perspective, when crossed with the current global manufacturing environment, could inform the way that we view supply chain management — both from a theoretical and practical perspective. The following section develops three such propositions.

## THEORETICAL PROPOSITIONS

One recurring theme that participants indicated was significantly more favorable in a making certain regions more attractive in the next 3 years was Government Trade Policies, including tax advantages, subsidies, and countertrade requirements. This directly relates to Dunning's Strategic Asset Seeking Advantage. This factor increased the attractiveness of North America, South Asia, Central/Eastern Europe, and the Middle East. The way that the government is perceived in regard to being a favorable region to conduct business matters. Due to the timing of this survey, the U.S. presidential election may have had an impact on the answers associated with North American location risk factors in the next 3 years. For example, while Government Trade Policies were viewed favorably, there was also significant perceived risk associated with them that hurt how attractive they were in North America.

**Proposition 1:** Factors affecting a region's attractiveness for movement of manufacturing change significantly over time, with Government Trade policies increasingly considered as a differentiator.

Managers should be aware of these shifts of trends in location. Developing a comprehensive risk assessment analysis and a total cost of doing business in a particular region will help organizations make the appropriate decision. The location factors in eclectic theory were modified from its original version in 1980, to its revised version in 1998 (Dunning, 1998), to reflect a greater level of complexity regarding how various location advantages and disadvantages work together. As more recent research indicates, it appears that certain factors such as government trade policies may be gaining prominence in the location decision (Mann, 2012). It might be time to rethink the way that the government's influence is considered in the eclectic theory from both a location and foreign direct investment standpoint.

There are several important themes that develop across emerging economies. First, Supply Interruption Risk is a significant concern when choosing East Asia, South Asia, Africa, South America, and the Middle East. It is also a concern when dealing with Oceania,

although the issue there might be the vast distance more so than other supply chain factors. What this does tell us is that supply chain factors are viewed as increasingly important sources of potential risk that should be weighed in to the manufacturing location decision (Gereffi & Lee, 2012).

**Proposition 2:** Supply chain-related factors are becoming more important in manufacturing location decisions.

From the perspective of Dunning's efficiency seeking advantage, the increasing importance of supply chain capabilities in the location decision is not surprising to practicing supply chain managers or to supply chain academics (Gereffi & Lee, 2012). However, much of the research (Dunning, 1980; Porter, 1994) indicates that the cost-related factors play the most significant role in location decisions. Companies initially moved to certain regions because the draw of low-cost labor overwhelmed most other considerations. However, understanding the cost differential and aligning cost savings with the potential of disruption may paint a different picture. Factor market rivalry tells us that many supply chain factors that seem ubiquitous are often given only cursory attention when offshoring, which can create significant competitive risk of the organization in times of shortage (Ellram, Tate, & Feitzinger, 2013). One of the reasons that supply interruption risk is increasingly important is because interruptions can increase costs (through the recovery process) and decrease revenue (due to lost sales), thereby reducing the firm's profit (Bode, Wagner, Petersen, & Ellram, 2011; Ellis, Henry, & Shockley, 2011). The negative risk of supply chain interruption associated with the movement of manufacturing to numerous regions indicates that this is becoming a differentiating factor. While it may be a bit preliminary to suggest this, the research provides some support for the next proposition.

**Proposition 3:** Companies are increasingly moving beyond cost savings to consider impact on total cost, profitability, and customer value creation when determining preferred regions for manufacturing locations.

Increasingly, cost savings is not considered in isolation in determining where manufacturing should be located. In fact, as the economies of once "low cost regions" grow, the focus of manufacturing location on the delivery of value to customers located in these regions is likely a large driver of the manufacturing location decision. The results of this study support case research that indicates that more strategic factors

such as value capture are becoming a more important issue (Mudambi, 2008).

## LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There are some limitations to this research that should be addressed in future work. The first is the fact that the survey respondents took a U.S. perspective. Because it was an election year, some of the results of the survey may well have been biased by political platforms and continuous publicity on the "Bring Jobs Back to America" campaign. This limitation may be overcome by replicating the survey in a nonelection year and/or expanding the pool of respondents outside of the United States.

This research also used survey data. Large, global, multinational firms may have different responses for different manufacturing locations, which was not accounted for in the data. There is the potential to perform in-depth case-study research on a few multinational organizations to better understand how the decision making works in a decentralized environment.

Also, this research focused only on manufacturing decision locations. It would be interesting to try to understand the supplier location decision as well. Are the drivers or factors that cause companies to look in a specific location for suppliers the same as those that are involved in the manufacturing location decision? Also, are there different drivers when seeking a service supplier versus a goods supplier?

Finally, there is a need to look through different theoretical lenses and how they apply to this phenomenon. The eclectic theory provides a strong foundation, but there may be other reasons why managers are making the location choices that they are making. In addition, the FDI aspect of location theory is worth exploring as differential tax issues can play an important role in the manufacturing location decision.

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