

# Perceptions of Doing Business in Other Countries: A Logistic Regression Analysis of Survey Results

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**Abstract** - This study involved an analysis of survey results about perceptions of doing business. U.S. Manufacturing managers were asked about their opinion on the Ease of Doing Business indicators with respect to Mexico, India, China and Singapore. The purpose is to find out about the manager's perceptions and determine from a set of given variables which are significant to their opinions. Variables used included demographics characteristics, competitive priorities and how challenging is to offshore diverse functions. A comparative analysis was added where scores for perceptions were checked against the World Bank rankings. Findings include that managers having experience with outsourcing is significant for successful companies and in general Time to Open a Business and Trading Across Border are two business indicators impacted by perceptions. Flexibility and Cost were significant to China for trading across border and protecting investors. Quality and Delivery were significant to Singapore for trading across border issues. The level of challenge to outsource assembly resulted significant to China when dealing with time to open a business and trading across border issues. A comparative analysis with the World Bank rankings resulted in a gap between perceptions and reality. The study is important because we learned what variables not commonly found in the literature are significant for doing business in each of the selected countries and that perceptions are not aligned to the World Bank published measures. Manufacturing companies can now review perceptions by providing proper training or support to their outsourcing decision makers. It is expected that better outsourcing decisions can be reached and companies can actually realize improved benefits.

**Keywords** - Outsourcing, Offshoring, Ease of Doing Business, Logistic Regression, Managerial Perceptions.

## 1. Introduction

Amongst the business practices that prevail in the global economy is international outsourcing also commonly referred as offshoring. One of the definitions of international outsourcing used is the strategy of

transferring activities across national borders [10]. Additionally [10] explain that offshoring is not a new concept since we can find evidence if its beginnings during the 1950s. Overtime the practice became relevant due to different reasons being one frequently mentioned in the literature like cost savings [14,6] and rare resources or skills [6]. But also companies began experiencing unwanted situations like lack of quality and communications issues [18] that arise from language and culture differences and many others such in the areas of administrative and technical work[17]. These issues then made companies aware of the fact that the expected benefits were not achieved. Some can be thought of those reported as hidden cost discussed in [18]. So should companies continue sending their business/operations overseas? The question has been already answered as we continue to see that the trend of sending their business operations to other countries in Asia or Latin America continues [11, 12]. Thus, it remains critical that companies with offshoring activities know what factors may impact their perceptions of doing business in other countries. Thus, in this research, perceptions in challenges, competitive priorities and demographic characteristics are studied to see if these are significant in how managers perceive the doing business in different countries. Demographics such as age, experience with offshoring and, having lived abroad are used. Considerations about how challenging it is to move diverse functions (manufacturing, assembly, It, business processes) to other countries, and considerations about competitive priorities (quality, cost, delivery and flexibility) are included in the study. The countries of interest are Mexico, China, India and Singapore. The doing business refers to the indicators used by the World Bank when ranking economies. A contrast between the perceptions of U.S. manufacturing managers and the rankings is also provided. Several hypotheses are tested by using data collected through a survey where U.S. manufacturing managers were asked about their opinions in specific business indicators with respect to the above countries. It is expected that if more is known about what factors may influence how we think of countries, perhaps we would move in the right direction

for developing our resources and better prepare for decision making in offshoring. This paper presents an overview of relevant literature and reasons for selected countries, methodology, hypotheses, analysis of data and, conclusions.

## 2. Literature Review

Most of what has been written about offshoring involves the justifications or reasons for which a company should do business in other countries. Those reasons mainly include cost reduction [2] due to low cost of operations in other countries [4, 26]. For manufacturing, [27] cite cheap labor to be an incentive and provide the wage example for US workers vs. China workers. U.S. workers make \$11-\$12 per hour while their Mexican and Chinese counterparts can make \$1 to \$2.50 per hour. These authors also identify more incentives such as tariff reduction and tax breaks. [12] also attribute the movement of operations to low cost countries due to globalization. And more recently we can read that global competitiveness plays a bigger role. When taken into the global context it is completely advantageous as well. [1] describes the use of outside resources to reinforce its position in competition and [5] explains as justification the opportunity for using available resources. [26] also makes mention of the ease of access to new markets or new technologies that support doing business from most anywhere in the world. The issue with offshoring is no longer “offshoring” it is global offshoring. It then becomes now a supply chain strategy [2]. [5] explains that globalization affects the decisions made on manufacturing strategies and requires paying attention to outsourcing. More recently, offshoring practices were reported to include the management of human resources as well as defining strategies that become competitive while creating value and innovation as well as [21] improving service level. Whatever the reasons, [10] describe outsourcing as a complex phenomenon.

The trend of international outsourcing will continue and many have reported the trend to include not only the bigger corporations but the small and medium enterprise [12] for which international outsourcing seemed but no longer is less attractive due to economies of scale [24]. [22] also report the practice of outsourcing by business to “become an ever-increasing trend in today’s competitive markets” and explain that the trend may be related to what they define internal or external offshoring. Internal offshoring is in part defined as keeping full ownership and control while external offshoring refers to allowing independent foreigner providers controlling the business functions. Furthermore, the report on the state of the industry by the International Association of Outsourcing Professionals IAOP 2010 included an outlook for

outsourcing expansion programs in companies of surveyed members. The trend described in the report includes the following: In January of 2009, 36 % of the respondents indicated that their companies were expanding their future outsourcing programs. The same year, the number was 47% and by January 2010 it was 56%. Although the report makes mention of the recent economic crisis, it describes outsourcing trend as expanding, clear and pervasive [11]. In a broader sense, in a report by the Banking Journal outsourcing in all industries represents a \$150 billion market today and will keep growing at a rate of 20% annually [3].

Not everything is good news about outsourcing; there are also reports of disadvantages. Firms that send processes offshore do not obtain the financial benefits expected from that activity [13]. Some companies have found that the overall cost of offshored process is greater than before offshoring the processes even when the labor costs may be as much as 90% lower than in U.S. [26]. Lower quality, time zone difference, culture and ethics may increase the complexity of the offshoring process together with the increased difficulty of obtaining the expected benefits [26, 23]. Many companies have encountered a well-documented disadvantage: the hidden costs that result when companies fail to identify when outsourcing [18]. However, as long as there is a perceived economic benefit business or companies will continue doing business in other countries. Hence the importance of learning what may contribute to perceptions toward certain countries in terms of doing business. More particularly if we understand if certain factors are related to perceptions in doing business in Mexico, China, India and Singapore. Thus, the purpose of this research is to contribute to the knowledge of the factors affecting perception of doing business in specific countries. There is much in the literature that has been written about other reasons to offshore ranging from risks, cultural organization [8], innovation, efficiency gains and growth [24], etc.

### 2.1 Rationale for Selected Variables

In the international outsourcing literature, Mexico, China, and India are commonly mentioned to be important destinations by many U.S. manufacturing companies due to the low cost structure [16, 20]. [25] also recognize Mexico, India and Republic of China as low cost regions thus attractive for business. The increasing trend of international outsourcing includes small and medium size industries SMEs. [7] studied the impact of offshoring administrative and technical services for SMEs for the southwest area of the state of New Mexico and in the process these authors determined that Mexico and China together with India are commonly preferred countries for

SMEs in the selected region. [15] contributed in their paper with an organized analysis of the expected costs that U.S manufacturing systems embrace while offshoring and they provide an analytical model to evaluate these costs based off decisions to offshore to China and Mexico which they identify as “the most significant destinations for outsourcing of American manufacturing...” Mexico is an important selection in this study not only because of its well-known low cost structure, but because it represents an alternative to other countries when decisions are made about bringing operations close to home. This is known as near shoring. [3] recognize Mexico as a “near shoring partner while [20] discusses how Mexico becomes important due to increasing cost in China for certain type of apparel. Singapore was selected for this study since it appears in the rankings of the World Bank as the number one economy to do business. In the meantime, if the offshoring trend continues, it is important to determine if demographic characteristics are important.

[9] explains that firms having experience in offshoring outsourcing obtain benefits in the long run when the firms look forward internationalizing. However, the experience factor is discussed at company level but not at people’s level. [6] identifies lack of study in competitive factors mentioning those of cost, quality, flexibility and delivery. Depending on what is outsourced, the complexity varies. How challenging to offshore manufacturing, assembly, information technology and business process may also be significant. However, studies of how the challenging level perception of doing business in other countries is not found in the outsourcing literature as such. Additionally, the ease of doing business in China, India, Mexico and Singapore rankings from the World Bank provides insights and creates debate for differences between what the World Bank says and the perceptions of U.S manufacturing managers. Then an opportunity exists for a comparative measure of alignment of perceptions from managers and reality taken from published scores by the World Bank data.

### 3. Methodology

This study was developed while using a survey to ask U.S. manufacturing managers their opinions about outsourcing. The data was collected using a survey sent to a panel of 871 U.S managers in all manufacturing industries. The survey was distributed by using Qualtrics – an online survey provider- and a panel of experts administrated by Qualtrics. The main criterion for selecting responders was that these must have decision responsibilities in outsourcing/offshoring in a manufacturing setting. Out of the 871 surveys sent out, 220 were responded and only 163 surveys were usable. The response rate was 18.71% which is the expected to be reasonable for this type of

surveys. The selected respondent should be a manager with outsourcing responsibilities within an industry classified in the NAICS code 30-33. Some of the positions held by the respondent included operations managers, manufacturing managers, senior project manager, information technology director, director of operations, CEO, production manager, vice president of management and operations, logistics manager, general manager, supply chain manager, president, etc. The data was collected using Excel and SPSS Version 21 for testing the hypotheses and any other statistical analysis. The survey was build using Likert scale methods to score and rate responses.

### 4. Hypotheses Testing and Results

This research involves different set of variables that may or may not have an effect in perceptions of doing business in certain countries. The research scope is limited to the following variables: demographic characteristics (Age, experience with outsourcing, lived abroad) of U.S. manufacturing managers with outsourcing responsibilities, considerations about challenges to offshoring diverse processes (manufacturing, assembly, information technology and business processes), and considerations about competitive priorities (quality, cost, delivery and flexibility). Additionally, the ease of doing business factors used in this research includes some the World Bank indicators used when ranking countries. Only 5 indicators were selected for this research and these are listed in table 1.

**Table 1 Researched Variables**

Background Factors	Age,
	Have Experience in outsourcing
	Have Lived abroad
Challenges to Offshoring	Manufacturing
	Assembly
	Business Process
	Information Technology IT
Competitive priorities position	Cost
	Quality
	Delivery
	Flexibility
Ease Of Doing Business	Cost
	Time to open a business
	Protecting investors
	Taxes
	Trading across borders

The variables are the Ease of Doing Business indicators from the World Bank to rank economies [28], and used in a previous study [19]. The reliability scales are reported as follows. For Challenges to Offshoring, the Cronbach Alpha reliability scale was 0.737 for competitive priorities, 0.702 and for Ease of Doing Business indicators 0.877.

**Hypothesis Ha0:** There is no significant relationship between successful companies and having experience with outsourcing, have experience living abroad and age of managers with outsourcing responsibilities.

**Hypothesis Hb0:** U.S. manufacturing managers that have experience in outsourcing, have lived abroad and are certain age have better perception of doing business in Mexico, China, India and Singapore than those that do not have experience, have not lived abroad and are of certain age.

**Hypothesis Hc0:** U.S. manufacturing managers that think of the offshoring of manufacturing, assembly, business process and IT as more challenging will have a better perception of doing business in Mexico, China, India and Singapore than those who think the offshoring of manufacturing, assembly, business process and IT as less challenging.

**Hypothesis Hd0:** U.S. manufacturing managers that think of their competitive priorities cost, quality, delivery and flexibility as being better than average or superior will have better perception of doing business in Mexico, China, India and Singapore than those who think their competitive priorities are average or below.

#### 4.1 Data Summary

This section includes the summary of collected data and the following section presents the testing of hypotheses. The survey used to collect data is shown in Appendix A. Table 2 depicts some demographics about the responders. Out of the 163 responses, 66 managers indicated that their

**Table 2 Demographics**

N (Number of responders)	163
Age (Years)	
20 < 31	35
31 < 41	66
41 < 51	35
51 < 60	17
>60	10
Have experience with outsourcing	140
Average number of years of experience	7.5
Have lived abroad	66
Average number of years lived abroad	2.94

age is within a range of 31 to 40 years old in which the average age is found. Table 3 shows the cross tabulation for having experience and having lived abroad factors. Only 64 out of those that have experience outsourcing

**Table 3 Experience Vs. Lived Abroad**

		Have Lived Abroad		Total
		Yes	No	
Experience	Yes	64	76	140
	No	2	21	23
Total		66	97	163

have lived abroad. 140 out of the 163 had some experience with offshoring. Of those managers that have experience with outsourcing, 30% have outsourced to Mexico, 31% to India, 46% to China. Very few have

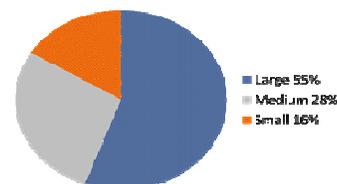
**Table 4 Experience in Selected Countries**

Have experience in Outsourcing to	Number of Responders	% of N= 163
Mexico	50	30
India	52	31
China	75	46
Singapore	7	4

experience with outsourcing to Singapore (See table 4). Out of 163 surveys used in this study, 16% of responders specified that their company size is less than 50 employees, 28% anywhere between 50 and 250 employees and about 55% at least 250 employees (See Figure 1). According to responders, the classification of company size versus how successful is the company is shown in table 5. It is interesting to see that out of all opinions collected, most managers thought their company is successful. However, none of the managers for small and medium companies thought their companies were Not Very Successful.

**Table 5 Company Size Vs Success Level**

How successful is the company	Company Size			Total
	Small < 50	Medium 50< 250	Large >250	
Not Very Successful	0	0	2	2
Somewhat Successful	11	9	9	29
Successful	14	21	43	78
Very Successful	2	16	36	54
Total	27	46	90	163



#### 4.2 Hypotheses Testing and Discussions

In testing the hypotheses, a significance level of 5% was used. The first hypothesis is as follows:

##### 4.2.1 Hypothesis Ha0

Hypothesis Ha0: There is no significant relationship between successful companies and having experience with

outsourcing, have experience living abroad and age of managers with outsourcing responsibilities.

**Discussion** A logistic regression analysis was performed with the Successful Company as dependent variable and, Have Experience with Outsourcing, Have Experience Living Abroad and Age of Managers as the predictors. The logistic regression model does not determine if there is significant relationship, instead the test may reports probabilities of a company being successful increasing each time a manager has either experience with outsourcing, has lived abroad and his/her age is above average age. The model significantly predicted probabilities of the outcome in the response variable. The Omnibus Chi-square = 8.803, df= 3, p < 0.05. The Hosmer and Lemeshow test show a p-value of 0.983 indicating the data is a good fit to the model. The Wald factor for having experience is 8.345 and the odds for a company being successful increases when a manager has experience with outsourcing by a factor of 4.552 (95% CI 1.628 and 12.72) being this variable the one significant at 0.004. Tables 6 through 8 show the output report.

4.2.2 Hypothesis Hb0

Hypothesis Hb0: U.S. manufacturing managers that have experience in outsourcing, have lived abroad and are of certain age have better perception of doing business in Mexico, China, India and Singapore than those that do not have experience, have not lived abroad and are of certain

age.

Binary logistic regression was used. A binary logistic regression model is appropriate when the dependent

Table 7 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.395	4	.983

Table 6 Omnibus Tests of Model Coefficients

Model	Chi-square	df	Sig.
Protecting Investment	8.803	3	0.022
Trading Across Borders	6.446	3	0.092

Table 8 Variables in the Equation

Step 1 <sup>a</sup>	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Lived Outside the US	-.109	.453	.058	1	.810	.897	.369	2.179
Has Experience with Outsourcing	1.516	.525	8.345	1	.004	4.552	1.628	12.727
Age *	.009	.430	.000	1	.984	1.009	.434	2.343
Constant	-.258	.792	.106	1	.744	1.295		

a. Variable(s) entered on step 1: Lived Outside the US, Has Experience With Outsourcing, Age.  
\*Age has been recoded to be binary above the median and at and below the median score

variable is a dichotomous variable. In this this case, the dependent variable is the scores of the World Bank indicators that were coded either as a zero if the score was below or equal to the median and a 1 if the score was above the median. The regressors were Age, Have Experience with Outsourcing and Have Lived Abroad. Age is included in the analysis and is coded as binary for above average and below average. Table 9 shows the outputs of the logistic regression models for which the models were good as shown in the Omnibus test, and where the regressor is significant and actually can be used to predict the probabilities for increasing or decreasing values of the dependent variable.

**Discussion.** We can argue regression models can be used to understand the chances of a change in the dependent variable due to a change in the regressor variables. The change occurs for the Time to Open a Business and Trading Across Border. Their alpha is less than 0.05 for both. Time to Open a Business is used here to describe the interpretation of the results. The Omnibus Chi Square is 12.207 with p<0.05 (0.007). The Hosmer and Lemeshow test shows the data is a good fit to the model at Chi = 1.336 and Sig = 0.885. A higher value of the significance of the test is desirable. The Wald factor for the regressor variable Has Lived Abroad is 10.215. The regressor is significant at  $\alpha = 0.001$ . Then we can say that the chances of a U.S. manufacturing manager perceiving the Time to Open a Business in Mexico as

Table 9 Model Output for Binary Logistic Regression

Country	World Bank Indicators	Omnibus Test		Hosmer and Lemeshow Test		Regressor	$\alpha$	Exp(B)	Wald	CI 95%
		Chi	Sig	Chi	Sig					
MEXICO	Time to Open a Business	12.207	0.007	1.336	0.885	Have lived abroad	0.001	3.181	10.215	1.564-6.467
	Trading Across Border	8.708	0.033	1.320	0.858	Age	0.008	2.735	7.085	1.304-5.737
INDIA	Time to Open a Business	12.115	0.007	1.016	0.907	Experience with Outsourcing	0.003	0.202	8.565	0.069-0.590
	Time to Open a Business	12.136	0.007	0.638	0.959	Experience with Outsourcing	0.024	0.323	5.080	0.121-0.863
CHINA	Age					Age	0.028	0.457	4.841	0.227-0.918
	Age					Age	0.018	0.419	5.641	0.205-0.859
	Age					Age	0.012	0.394	6.256	0.190-0.817

**Table 11 Logistic Regression Output For Hypothesis Hc0  
By Country and Challenging Factor Regressors**

COUNTRY	INDICATOR	Omnibus Test	Nagelkerke R Square	Hosmer and Lemeshow	Regressor	Sig	Exp(B)
China	<b>1. Trading Across Border</b>	Chi = 13.107 Sig 0.011	0.119	Chi = 8.440 Sig 0.208	<b>1.Assembly</b>	0.016	3.603
					<b>2. Business Processes</b>	0.015	0.373

very difficult or most difficult increases by a factor of 3.181 (Exp(B), 95%CI 1.641-6.467) if the manager has lived abroad. Similarly, the chances of a U.S. manufacturing manager perceiving Trading Across Border with Mexico as being difficult or very difficult increase by a factor of 2.735 (Exp(B), 95% CI 1.304-5.737) if the U.S. manufacturing manager is above average age or above 35 years old. See table 2. Thus, the null hypothesis is accepted for Time to Open a Business and Trading Across Borders since having lived abroad and being of certain age increases the chances for a high score. The interpretation has to be careful because higher score in these indices usually mean very difficult or most difficult not better. The researcher cannot reject or accept the null hypothesis for the other 3 ease of doing business indicators since we did not have good predictive models to use. The three business indicators are Cost, Pay Taxes and Protecting Investors. For the not so good models, most of the output for Omnibus test was not significant. However, overall, when variables were entered into the models, there was an increase on predictive capacity and can be easily obtained from the classification table output. The Hosmer and Lemeshow test mostly yielded a high value of  $p$  (Close to 1). The same analysis could be done for each of the other listed indicator for the specific countries. Interestingly, all countries had at least one significant indicator. An additional analysis was also performed. Since experience was significant variable in a successful company when outsourcing, several logistic models were run to see if any of the indicators were significant to a company being successful or not with outsourcing. These models then had Success as a dependent variable and the indicators as regressors. For this data set, none of the indicators were significant.

#### 4.2.3 Hypothesis Hc0

Hypothesis Hc0: U.S. manufacturing managers that think of the offshoring of manufacturing, assembly, business process and IT as more challenging will have a better perception of doing business in Mexico, China, India and Singapore than those who think the offshoring of manufacturing, assembly, business process and IT as less challenging.

Logistic regression models were run with the dependent variables being the ease of doing business indicators. The indicators were transformed to binary variables with a value of 0 if a score of less than or equal to the median and a 1 if the score is greater than the median. The categorical variables are how challenging is to outsource manufacturing, assembly, information technology or business process. These were coded as binary variable where 0 corresponded to the regressor variables as equal or less than challenging, and, 1 as very challenging or extremely challenging. Tables 10 and 11 show the most significant outputs of the regression models.

**Discussion.** Table 10 presents the output for those models where the business indicator is the dependent variable but the analysis used the total score given to each indicator for all countries. For example, the Cost score was calculated using all the scores provided by all managers for all countries. Cost was not analyzed by country but as total score. The variable was coded as a dichotomous variable where a zero is given if the score is at and below the median value and a 1 if the score is above median value. Interestingly, Assembly resulted significant and if a manager thinks Assembly is very challenging or extremely challenging, the chances of a manager thinking that Trading Across Border will have a higher score in general will increase by a factor of 2.44 (Exp(B)). The last score in table 10 bottom line is using the overall score per country as opposed to business indicator. Thus, scores for all indicators were added to obtain an overall score for each country. If a manager thinks that Assembly is very or extremely challenging, the chances are that the scores given to China are higher will increase by a factor of 3.625(Exp(B), 95%CI 1.4-8.99). If a score increases, the reader has to remember that an increase in the score of an indicator means very difficult or most difficult and not necessarily better.

Table 11 shows some of the significant outputs when considering manufacturing, assembly, information technology, and business processes in terms of challenging level. The analysis was done using the independent variables of how challenging is to outsource manufacturing, assembly, information technology and business process and the dependent variables were the business indicators. A model was run for each indicator for each country and the one that could be used is the

model where the dependent variable is Trading Across Border for China and how challenging is to outsource Assembly as the significant regressor. This resulted in the following: if a U.S. manufacturing manager thinks Assembly to be very challenging or extremely challenging the odds that a manager would think of Trading Across Border for China as very difficult or most difficult increase by a factor of 3.603 ( $\text{Exp}(B)$ ). The conclusion then should be that the null hypothesis is accepted. The reader must be reminder that a higher score means very difficult or most difficult and not necessarily better.

#### 4.2.4 Hypothesis Hd0

Hypothesis Hd0: U.S. manufacturing managers that think of their company's competitive priorities cost, quality, delivery and flexibility as being better than average or superior will have better perception of doing business in Mexico, China, India and Singapore than those who think their company's competitive priorities are average or below.

Like in previous sections, logistic regression models were run with the dependent variables being the ease of doing business indicators. The indicators were transformed to binary variables with a value of 0 if the score is less than or equal to the median and a 1 if the score is greater than the median. The categorical variables were competitive priorities of cost, quality, delivery and flexibility. Those were coded as binary variable where zero corresponded to the regressor variables as average and less than average and, a 1 as better than average or

superior. Tables 12 and 13 show the most significant outputs of the regression models.

**Discussion** From table 12 we can see that the regressors Flexibility and Cost were significant for China. Quality and Delivery are significant for Singapore. The logistic regression outputs provided the following: the chances of a U.S. manager perceiving Trading Across Borders with China as being very difficult or most difficult increase by a factor of 2.424  $\text{Exp}(B)$ , if the manager perceives that Flexibility in their company as being better than average or superior. Similarly, the chances of a manager perceiving Protecting Investors as being very difficult or most difficult increases by a factor of 2.290  $\text{Exp}(B)$ , if the manager thinks Cost in their company is better than average or superior. For Singapore, the chances of a manager thinking Trading Across the Border is very difficult or most difficult are increased by a factor of 5.660  $\text{Exp}(B)$  and 0.145 $\text{Exp}(B)$  if the manager thinks Quality and Delivery respectively are above average or superior average. The null hypothesis for the China with respect to Trading Across Border and Protecting Investors is accepted and we can conclude that a higher score is given to the indicators. However, keep in mind that we have to be very careful at interpreting higher score. For the indicators, it means very difficult or most difficult and does not necessarily mean better. For China, the models run for the other three indicators; Paying Taxes, Cost and Time to Open a Business did not have good predictive capacity and mostly the regressors output showed to be non-significant. The interpretation for Singapore would be along the same lines and for Mexico and India, there were no significant regressors.

**Table 12 Logistic Regression Output For Hypothesis Hd0  
By Country and Competitive Priority**

COUNTRY	INDICATOR	Omnibus Test	Nagelkerke R Square	Hosmer and Lemeshow	Regressor	Sig	Exp(B)
China	1. Trading Across Border	Chi = 7.107 Sig 0.130	0.067	Chi = 4.096 Sig 0.393	1. Flexibility	0.042	2.424
	2. Protecting Inventors	Chi = 3.548 Sig 0.471	0.036	Chi = 6.447 Sig 0.168	1. Cost	0.064	2.290
Singapore	1. Trading Across Border	Chi = 0.008	0.134	Chi = 1.899 Sig 0.863	1. Quality 2. Delivery	0.007 0.008	5.660 0.145

In table 13, the output corresponds to the analysis performed by adding all the scores related to each of the indicators for all countries. The Cost listed under the INDICATOR column is the sum of all the scores for Cost for all countries. As in previous sections, the regressor Cost (as competitive priority) is significant to the indicator Cost (World Bank Indicator) at  $p=0.036$ . The regressor Quality is significant for Protecting Inventors at  $p=0.044$ . No model for total by country was reported as none was found to be very good or that the regressors were found to be significant. Flexibility and cost are competitive priorities found in relocation decisions research [6]. Testing the hypothesis allowed us to see those are significant in perceptions towards China and Singapore and to specific indicators of Cost, Pay Taxes and Protect Inventors.

## 5. World Bank Rankings vs U.S. Manufacturing Managers Perceptions

The World Bank provides reports of the ease of doing business and ranks 183 economies based on many indicators. This research used only 5. See table 1. In previous reports [19], World Bank indicators were normalized for purpose of being compared to the perceptions U.S. manufacturing manager may have. In this research, the researcher presents means and standard deviations of the scores (Table 14) but also, a summary of the World Bank rankings and their corresponding indicators (Table 15). Because no standardization or transformation of data is done in this section, the discussion is centered on the magnitude of difference between the score provided by the U.S. managers and the World Bank rankings. The analysis in this section is important because it connects the perceptions with reality and allows us to compare perceptions to existing data. Once we learn about what factors are significant to each country in previous sections we can now compare those perceptions to an already existing published measure.

**Table 13 Logistic Regression Output For Hypothesis Hd0  
Total by Business Indicator and Country**

INDICATOR	Omnibus Test	Nagelkerke R Square	Hosmer and Lemeshow	Regressor	Sig	Exp(B)
1. Cost	Chi 5.928 Sig 0.205	0.052	Chi 6.330 Sig 0.387	1. Cost	0.036	2.301
2. Time to open a Business	Chi 1.516 Sig 0.824	0.014	Chi 4.711 Sig 0.452			
3. Pay Taxes	Chi 8.356 Sig 0.079	0.073	Chi 1.160 Sig 0.949	1. Flexibility	0.079	0.468
4. Protecting Inventors	Chi 8.493 Sig 0.75	0.074	Chi 1.182 Sig 0.947	1. Quality	0.044	2.890
5. Trading Across the Border	Chi 1.674 Sig 0.796	0.015	Chi 5.456 Sig 0.363			
<b>BY COUNTRY</b>						
Overall India	Chi = 6.144 Sig 0.189	0.05	Chi = 3.205 Sig 0.524	1. Quality	0.072	2.538 95% CI = 0.920-7.0

**Table 14 Summary of Means and Std. Deviation of Ease of Doing Business Indicator**

	Mexico	India	China	Singapore	Mean /Std. Dev
Cost	2.13	2.48	2.95	2.91	2.616
	1.192	1.19	1.247	1.257	0.776
Time to Open a Business	2.37	2.62	2.99	2.93	2.727
	1.194	1.085	1.349	1.18	0.774
Protecting Investors	2.74	2.78	2.91	2.75	2.796
	1.279	1.127	1.273	1.141	0.796
Paying Taxes	2.3	2.59	2.81	2.86	2.638
	1.103	1.095	1.189	1.174	0.835
Trading Across Border	2.17	2.76	2.80	2.84	2.6398
	1.222	1.08	1.22	1.082	0.847
Means per Country	2.29	2.59	2.79	2.83	
Std. Deviation per Country N=152	.894	.794	0.911	0.84	

**Discussion.** You can observe that all the mean scores of the manager's perceptions obtained from the survey were between 2 and 3. The survey asked managers to provide their opinions of the World Bank indicators. The survey was in fact a limitation since the only possible scores given to the managers to choose would vary between 1 and 5. A 1 is the easiest and a 5 being the most difficult. But, there were no extremes for any of the means. We can see in table 15 that Singapore is the number one economy and Mexico is ranked 39. If you observe the means (table 14, bottom line), Mexico has the lowest mean score making it the easiest country to do business, however Singapore has the highest score of 2.83 making it the hardest. In the World Bank rankings, a smaller value such as the one for Singapore translates into better. Between China and Singapore, the gap is big. China is ranked # 90. The difference in rankings between Singapore and China is huge and when compared to the manager's perceptions the gaps seems very small considering that the mean score for China is 2.79 and for Singapore is 2.83. If we consider the rankings per indicator, all indicators have a very similar mean between 2.616 for Cost and 2.796 for Protecting Investors (right most column). The standard deviations are between 0.77 and 0.84 which is pretty much the same for all of them. If we consider the World Bank rankings, the Time to Open a Business for India is 184, and for Singapore is 2, the difference is big once again

and the score provided by the survey do not seem to provide a reasonable difference within its range. That is, even if the survey values limit the choice between 1 and 5, we can understand that a difference between a 2 and a 5 would be at least noticeable. Due to the scores, the manager's perceptions do not seem to indicate a large difference on the ease of doing business between countries. The results from the survey show a big gap between the World Bank rankings and the perceptions of the manufacturing managers. The researcher estimates that for this research the information presented in the tables will suffice to show that there is difference between perceptions and reality. Further work needs to happen and statistical proof needs to be developed. However, for purposes of this research, the last section is used to illustrate the gaps in perception given that more factors than the traditional ones are now found to be significant. Once the logistic regression helped us to determine which variables were significant to the manager's perceptions, it was necessary to compare these perceptions to some existing measure. Because the study found the significant factors, and that there is a gap with an already published measure, better plans, programs, information can be gathered and provided to our managers so they can achieve better outsourcing decisions. It is important to make clear that the ranking selected is for China (Subnational). It means few important cities were included in the analysis

**Table 15 Current Rankings and Scores for the Ease of Doing Business**

	Mexico	India	China	Singapore
<i>World Bank Ranking</i>	<b>39</b>	<b>142</b>	<b>90</b>	<b>1</b>
Cost	67	158	128	6
Time to Open a Business	108	184	11	2
Protecting Investors	62	7	132	3
Paying Taxes	120	156	37	5
Trading Across Borders	98	126	32	1

NOTE: The overall ranking provided in the 2015 report shows the current rankings and the ones showed in the table

(<http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Chapters/DB15-Report-Overview.pdf>)

The scores were taken from the 2014 report from <http://www.doingbusiness.org/rankings>

and the ranking according to the World Bank it represents an average of those cities. There is another for Taiwan, China which ranks Taiwan, China as number 19.

## 6. Limitations and Future Studies

This study intended to include data from managers who identified their companies to be small, medium or large. However, due to the small number of respondents for small firms, the size of the firm was not included in the analysis as a covariate. Additionally, the connection between indicators and a successful company was not established in this research as explained in the hypothesis Ha0 section where several models were run but none with acceptable predictive capacity. This is left for future research. Further analysis should be done in outsourcing but it is important that compilation about more specific data from countries is available. For example, more work needs to happen as to what to outsource and to where. Additionally, future research may include analysis of getting access to new competencies as drivers for outsourcing decisions. The comparative analysis using the World Bank rankings should be considered as initial research and was used because data was available and perhaps better comparative measures should be developed.

## 7. Conclusions

This study includes different variables than the commonly studied in the literature. These variables included demographic characteristics, challenges to offshore diverse functions and competitive priorities. The results provided knowledge of important perceptions and significant to business indicators for doing business with Mexico, India, China and Singapore. Because we found what factors are significant, we can now pay attention to these factors and perhaps train, develop, find related information or simply develop a better support system for manufacturing managers with outsourcing decisions. It is expected that the more managers know the better the decisions regarding outsourcing. Thus, manufacturing companies would benefit from understanding other factors that the traditionally studied and better outsourcing outcomes can be expected. Perhaps, better return on their investments.

Findings include that a manager having experience with outsourcing is a significant factor for companies that are successful. In general, Time to Open a Business and Trading Across Border are two of the business indicators that were impacted by perceptions. In a more specific note, the core competencies of Flexibility and Cost were significant to China when trading across border and for protecting investors. Quality and Delivery are significant to Singapore for trading across border issues. Perception of how challenging to outsource is assembly resulted

significant to China in terms of time to open a business and trading across border issues. Finally, a comparative analysis with the World Bank rankings resulted in a gap between perception and reality. This is important because the perceptions for doing business in each of the selected countries are not aligned to the known published measures of the World Bank. Then, perhaps reviews of perceptions can facilitate better knowledge. By doing so, it is expected that better outsourcing decisions can be reached and companies can actually realize improved benefits.

## 8. References

- [1] Arnold, U., "New dimensions of outsourcing: a combination of transaction cost economics and the core competencies concept" *European Journal of Purchasing & Supply Management*, (6:1), 23-29, 2000.
- [2] Bengtsson, L., Von Haartman, R., & Dabhilkar, M., "Low-cost versus innovation: contrasting outsourcing and integration strategies in manufacturing", *Creativity and Innovation Management*, 18(1), 35-47, 2009.
- [3] Bielski, L., "Outsourcing's new global reach", *American Bankers Association. ABA Banking Journal*, 95(6), 79, 2003.
- [4] Corbett, M. F., *The outsourcing revolution: why it makes sense and how to do it right*, Kaplan Publishing, Chicago, IL, 2004.
- [5] Dekkers, R., "Decision models for outsourcing and core competencies in manufacturing", *International Journal of Production Research*, (38:17), 4085-4096, 2000.
- [6] Da Silveira, G. "An Empirical analysis of manufacturing competitive factors and offshoring", *International Journal of Production Economics* 150, 163-173, 2014
- [7] Di Gregorio, D., M. Musteen & D. E. Thomas., "Offshore outsourcing as a source of international competitiveness for SMEs". *Journal of International Business Studies*, (40:6), 969-988, 2008.
- [8] Hahn, E. D. & K. Bunyaratavej., "Services cultural alignment in offshoring: The impact of cultural dimensions on offshoring location choices", *Journal of Operations Management*, (28:3), 186-193, 2010.
- [9] Hätönen, J., "Making the locational choice: A case approach to the development of a theory of offshore outsourcing and internationalization", *Journal of International Management*, (15:1), 61-76, 2009.
- [10] Hätönen, J., & Eriksson, T., "30+ years of research and practice of outsourcing—Exploring the past and anticipating the future", *Journal of International Management*, 15(2), 142-155, 2009.
- [11] International Association of Outsourcing Professionals IAOP, "Outlook Report on the State of the industry", 2010.
- [12] Kinkel, S. & S. Maloca., "Drivers and antecedents of manufacturing offshoring and backshoring—A German Perspective", *Journal of Purchasing and Supply Management*, (15:3), 154-165, 2009.

- [13] Kshetri, N., "Institutional factors affecting offshore business process and information technology outsourcing", *Journal of International Management*, (13:1), 38-56, 2007.
- [14] Kumar, S. & J. H. Eickhoff., "Outsourcing: When and how should it be done?", *Information, Knowledge, Systems Management*. Vol. 5, No. 4, pp. 245-259, 2006.
- [15] Kumar, S. & K. K. Kopitzke., "A practitioner's decision model for the total cost of outsourcing and application to China, Mexico, and the United States", *Journal of Business Logistics*, (29:2), 107-139, 2008.
- [16] Kumar, S., P. Zampogna & J. Nansen., "A closed loop outsourcing decision model for developing effective manufacturing strategy", *International Journal of Production Research* (48:7), 1873-1900, 2010.
- [17] Manning, S. "Mitigate, tolerate or relocate? Offshoring challenges, strategic imperatives and resource constraints", *Journal of World Business*, 49(4), 522-535, 2014.
- [18] Larsen, M. M., Manning, S., & Pedersen, T., "Uncovering the hidden costs of offshoring: The interplay of complexity, organizational design, and experience", *Strategic Management Journal*, 34(5), 533-552, 2013.
- [19] LaVan, H., Frago-Diaz, G., "Attitudes of U.S. Managers Towards Outsourcing: Survey Results and Managerial Implications", *The Business Review Cambridge*, 20(1), 1-8, 2012.
- [20] Leach, P., "Is China losing its edge?", *Journal of Commerce*. Dec 3, 2007.
- [21] Lewin, A. Y., & C. Peeters., "Offshoring work: business hype or the onset of fundamental transformation?", *Long Range Planning*, (39:3), 221-239, 2006.
- [22] Liou, J. J. & Y. Chuang., "Developing a hybrid multi-criteria model for selection of outsourcing providers", *Expert Systems with Applications*, (37:5), 3755-3761, 2010.
- [23] Real Time Technology Solutions. 2010. Statistics related to offshore outsourcing. <http://www.rttswb.com/outsourcing/statistics/>, Accessed (21-10-2011).
- [24] Roza, M., F. A. J. Van den Bosch & H. W. Volberda., "Offshoring strategy: Motives, functions, locations, and governance modes of small, medium-sized and large firms", *International Business Review* (20:3), 314-323, 2011.
- [25] Song, N., K. Platts & D. Bance., "Total acquisition cost of overseas outsourcing/sourcing: a framework and a case study", *Journal of Manufacturing Technology Management*, (18:7) 858-875, 2007.
- [26] Stratman, J. K., "Facilitating offshoring with enterprise technologies: Reducing operational friction in the governance and production of services", *Journal of Operations Management* (26:2), 275-287, 2008.
- [27] Stringfellow, A., M. B. Teagarden & W. Nie., "Invisible costs in offshoring services work", *Journal of Operations Management*, (26:2), 164-179, 2008.
- [28] World Bank Group, (2015) *Doing Business 2015 Going Beyond Efficiency*, p.4 Retrieved <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Chapters/DB15-Report-Overview.pdf>.

## Appendix A. Survey

1. Do you have experience in outsourcing /offshoring? If you have experience, how many years?
2. Have you ever lived outside of the U.S.?
3. What is your age?
4. Evaluate how you consider the following by selecting not challenging, low challenging, challenging, very challenging or extremely challenging for each. Manufacturing, Assembly, IT, Business Processes
5. How successful is your company?
6. Is your company : Small (less than 50 employees), Medium (more than 50,less than 250) or Large (more than 250 employees)
7. Indicate your opinion for the following about how your company compares to its competition in your industry, on a global basis considering by selecting poor, below average, average, better than average, superior or do not know.
  - 1) Cost, 2) Quality, 3) Delivery and 4) Flexibility
8. For each of the indicators below, indicate on a scale of 1 to 5, with 1 being the easiest and 5 being the most difficult, indicator of a particular country with respect to doing business in it. Each rating should be separate and not dependent on how you rated other countries.

Ease of Doing Business	Mexico	India	China	Singapore
Cost to open a business <ul style="list-style-type: none"> <li>• Legal fees</li> <li>• Process costs to start operations in dollars</li> </ul>				
Time to open a business <ul style="list-style-type: none"> <li>• Time it takes to process all paper work that allows for operations in days</li> </ul>				
Protecting Investors <ul style="list-style-type: none"> <li>• Transparency of transactions</li> <li>• Ability of shareholders to hold officers and directors responsible for misconduct</li> <li>• Liability of directors for miss use of company assets</li> </ul>				
Paying taxes <ul style="list-style-type: none"> <li>• Easy of filing</li> <li>• Incentives and taxes after a period of grace</li> </ul>				
Trading Across Border <ul style="list-style-type: none"> <li>• Documents to export</li> <li>• Time to export(days)</li> <li>• Cost to export (per unit of transport-container)</li> <li>• Documents to import</li> <li>• Time to import(days)</li> <li>• Cost to import (per unit of transport-container)</li> </ul>				