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PRODUCTION COST INFLUENCING PRODUCTION RESHORING DECISION AMONG MANUFACTURING MULTINATIONAL CORPORATIONS IN KENYA

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Abstract: **This study sought to identify the strategic drivers influencing reshoring decision among manufacturing multinational corporations in Kenya and was guided by the following research objective, finding out extent to which production cost influenced production reshoring decision. It also considered the moderating effect of market condition on reshoring decision. The study adopted cross sectional design and census method targeting 96 manufacturing multinational corporations drawn from membership of Kenya Association of Manufacturers with a response rate of 88.9%. Descriptive analysis, factor analysis, multicollinearity test, ANOVA test and logistic regression test were carried out for each variable. Statistical Package for Social Sciences Version 24 was used as the tool for data analysis. The study found out that production cost have positive influence on production reshoring decision. The combined effect of all independent variables and the moderating variable reflected a positive effect of 78.9% on the dependent variable. The study model was also found to be the optimal model for the study. The major recommendations from the study include: policy interventions Kenyan government on manufacturing labour and energy costs in order to realize the aspirations of Kenya's Vision 2030 on industrialization; investment in agile manufacturing by MNCs to increase operational flexibility, improve capacity to service unique customer orders, short production runs and overall operational efficiency; investment in supportive infrastructure to improve supply chain efficiencies and enable manufacturing entities improve on customer responsiveness and overall competitiveness of the sector.**

1. BACKGROUND OF THE STUDY

The global manufacturing landscape has over the last few decades been dramatically transformed by offshoring strategies as large manufacturing entities from Western Europe and the United States of America moved their production activities to low-labour cost locations. In particular Central and Eastern Europe and South East Asia become favourite destinations for these multinational corporations (Bailey & De Propris, 2014). For the period between 1970 to 2010 G7 nations share of global manufacturing value added has declined from 71 to 46 percent with much of the share being taken by emerging economies, China being the preferred destination for off-shoring and outsourcing (Baldwin and Lopez-Gonzalez, 2014). Offshoring and outsourcing strategies have contributed significantly to the internationalization and globalization of manufacturing activities.

More recently the phenomenon of reshoring has gained prominence in popular and specialized press (Booth, 2013) with increased reporting on reversal of offshored decisions. The Boston Consulting Group [BCG] in its 2013 report notes that a

number of multinational corporations have either moved their production back to home countries or to new locations. In 2012, General Electric Company announced its intention of reshoring its appliances manufacturing from plants in China to the USA while Apple intended to manufacture its Mac computers exclusively in the USA beginning 2013 (Gray, Skowronski, Esenduran & Rungtusanatham, 2013). Other manufacturing entities from developed countries have signaled their intention to reconsider their previous offshoring decision (Bailey & De Propris, 2014).

Regional Perspective on Production Reshoring

Share of manufacturing value added for Africa remains insignificant compared to developed and emerging economies. A United Nations Industrial Development Organization (UNIDO, 2017) report on World manufacturing statistics for quarter four 2016 puts the share of manufacturing valued added for Africa at 1.2% against 19.9% for China. According to UNIDO (2017) individual countries performance recorded mixed results majority of the countries registering a decline in manufacturing output. South Africa the region's top manufacturing country recorded a decline of 0.6% against the continent's average decline of 0.5%.

Manufacturing Industry and Manufacturing Multinational Corporation in Kenya

The history of multinational corporations in Kenya is synonymous with the history of manufacturing in this country. Kenya's manufacturing sector dates back to the pre-independent years when some of the present day multinational corporations began manufacturing operations. When Kenya gained independence in 1963, the new government was keen to up the pace of industrialization for employment creation and accelerate economic growth (Chege, Ngui & Kimuyu, 2014). The pursuit of import substitution policy and enactment of legislation to support FDI such as the Foreign Investments Act of 1964 and establishment of a New Projects Committee in 1968 (to facilitate processing of MNCs investments) were part of the desire to industrialize.

The general objective of the study was to identify production cost influencing production reshoring decision among manufacturing multinational corporations in Kenya

Specific Objectives

To identify the influence of production cost on production reshoring decision among Kenya's manufacturing multinational corporations.

Research Hypothesis

Production cost does not influence production reshoring decision among Kenya's manufacturing multinational corporations.

DEFINITION OF TERMS

Multinational Corporation: A Multinational corporation (MNC) refers to a company or enterprise that has an integrated global philosophy encompassing both domestic and foreign operations in more than one country defines a multinational corporation as any business having production activities in two or more countries. Multinational corporations are usually large entities with operations across national boarder (Hill, 2005; Daniels, Radebaugh & Sullivan, 2009).

Production Cost: Production cost refers to the cost incurred by a manufacturing entity to create or produce a product. It denotes the various types and forms of costs that go into the production process and includes the labour, energy, consumable supplies, logistic and other factory costs (KPMG, 2007).

Reshoring Decision: Reshoring refers to the decision of a multinational manufacturing entity to shit it production activities from an offshore location to its home country or another location nearer its home base. Kinkel and Maloca (2009) see reshoring as the re-concentration of parts of production from a multinational corporation's own foreign locations as well as from foreign suppliers to the MNC's domestic production site.

Transaction Cost Theory

Transaction cost economies theory (TCT) emanated from the works of Ronald Coase (1937) and his seminar work on the nature of the firm. Coase (1937) opines that some transaction costs would be best performed by the firm while others by the market and developed a theoretical framework for determining the same. The theory was further developed through the works of Oliver William (1985). According to Williamson (1985) transaction costs include both ex-ante costs and ex-

post costs. Ex-ante costs include searching and information, drafting and negotiating an agreement and costs of safeguarding the agreement. Ex-post costs include (i) costs of evaluating the unit (ii) costs measuring of output and costs of monitoring and enforcement (William, 1985) all organized under an governance structure. Williamson defined a governance structure as an institutional framework in which the integrity of a transaction or related set of transactions is decided.

Eclectic Paradigm Framework

The eclectic paradigm was proposed by John Dunning (1980) to explain the development of offshored activities by multinational enterprises. The eclectic paradigm combines several components of previous theories to form the eclectic paradigm of international business. These theories are internationalization (Ronald Coase, 1937) and resource dependence theory (Pfeffer & Salancik, 1978). Dunning (1980) posits that MNCs actualize international investment decisions when international advantages are present. This theory emphasizes the desire of firms to seek advantages that will bring maximum benefit to their business operations.

Table 1.1: Relationship between eclectic theory and reshoring study constructs

Eclectic Theory	Reshoring Study Constructs
Resource seeking advantage	Lower labour cost, lower logistic cost and lower energy cost
Market seeking advantage	Proximity to customers
Efficiency seeking advantage	Shorter lead times, supply chain interruption risk, coordination risk

The OLI framework has been used in the study of reshoring strategy decision. Ellram, Tate and Petersen (2013) used the OLI framework in their study on offshoring and reshoring. The OLI framework was used for the study of the third independent variable operational flexibility and test hypothesis three.

2. EMPIRICAL REVIEW

Production Cost

Kinkel (2012) considered trends in relocation and backshoring activities in the midst of the global financial crisis. The study considered a dataset of 1,484 German manufacturing firms finding that backshoring activity to be a relevant phenomenon for such firms. Further results show that increase in costs erodes the comparative advantages of a location with MNCs seeking to maximize on their production capacity utilization. Results from Fisch and Zschoche (2012) also indicate that rising labour costs significantly influences MNCs decision to reshore.

In their study on drivers of manufacturing reshoring Bailey and Propris (2014) surveyed 80 manufacturing firms in the U.K. automotive industry. The study findings suggest that reshoring is not widespread in the U.K. automotive industry; of the surveyed firms 21% indicated that they had undertaken reshoring; 16% were considering it while 5% were not considering reshoring. The study concludes that increased transportation costs, concerns about product quality, rising labour costs overseas (China and Central and Eastern Europe) and exchange rate shifts are some of the main drivers for reshoring by U.K. manufacturers in the automotive industry. The study concludes that businesses are actively considering reshoring even though production activity relocation is still low. Boston Consulting Group (2011) in their study view the rise in Chinese production workers' wage relative to that of their U. S. counterparts as a driving factor for reshoring by U. S. manufacturing entities while Fratocchi *et al.* (2016) study on motivations for manufacturing reshoring, they find that changes in production costs influence manufacturing firms' decision to reshore. Changes in the cost structure for manufacturing entities can drive managers into moving production from an offshore location to the home country or a nearshore location.

$H_0$1: Production cost does not influence production reshoring decision among Kenya's manufacturing multinational corporations.

3. RESEARCH METHODOLOGY

Research Design

The research study adopted a cross-sectional research design to determine production cost affecting production reshoring strategy decision among MNCs operating in Kenya. From literature, research design is defined as the blue print, plans and procedures for collection, measurement and analysis of data (Creswell, 2009: Sekaran & Bougie, 2013). It is the

conceptual structure within which research is conducted (Kothari, 2004). Cross sectional research design is used to investigate variables in different contexts over the same period of time (Collis & Hussey, 2009). Cross sectional research design was appropriate for this kind of study as it represents a one point in time snapshot of the study (Cooper & Schindler, 2011). Martinez-Mora and Merino (2014) used cross sectional research design in their study on reshoring in the Spanish footwear industry while Bailey and De Propris (2014) used it in their study of reshoring in the U.K. automotive industry. The researcher was able to achieve the objectives of the study given the time constraints.

Target Population

The target population consisted of Kenyan manufacturing MNCs who are members of the Kenya Association of Manufacturers (KAM). The target population was relevant for the study since the researcher sought identify drivers influencing production reshoring strategy decision among this category of manufacturers. According to Kenya Vision 2030's second medium term plan the medium and large manufacturing entities which include MNCs based in Kenya constitutes less than 5% of the total number of manufacturing enterprises but account for over 60% of manufacturing contribution to the country's GDP (RoK, 2013). From literature (Daniel, 2012; Sekaran & Bougie, 2013) population is described as the universe or entire collection of people, events or objects of interest for which a researcher wanted to study.

Data Processing and Analysis

From literature, data analysis is a practice that involves conversion of raw data to enable extraction of useful information (Saunders *et al*, 2012). The process involves ordering and organizing the data. Quantitative and qualitative data will be collected necessitating the use of mixed methods for data analysis. According to Vargas-Hernandez, De Leon and Valdez (2011) quantitative measures attract the attention to the underlying objective facts giving evidence of the phenomena while qualitative data colours the analysis and interpretation of such phenomena.

The data was coded and processed using Statistical Package for Social Science (SPSS) data analysis software. Boone and Boone (2012) acknowledge difficulties of analyzing Likert data due to its non-continuous nature. Some of Likert type items will be analyzed individually while others will be combined into Likert scale data, summarized and converted into "accept" and "reject" to convert the qualitative responses into quantitative data. Data analysis was be carried out by use of descriptive and inferential statistics.

For Likert type items descriptive statistics such as median, mode, frequencies and Chi-square will be used. For quantitative data obtained from Likert scale descriptive statistics such as mean, standard deviation, Pearson's r, ANOVA, regression analysis and t-test were applied. Descriptive statistics enable presentation of quantitative descriptions in a manageable form (Gupta & Gupta, 2005). Prior to subjecting the data to inferential statistical analysis normality test of the data set will be carried out. Normality test is carried out to test whether the results are normally distributed. Consideration of descriptive values such as kurtosis and skewness of the data set are some of the tests used to check for normality of the data set. Use of non-normally distributed data can lead to incorrect results (Mukerji, 2008).

Multiple regression analysis was carried out to establish whether a relationship exists between the independent variables and the dependent variable. Pearson's moment correlation is a measure that is used to determine whether a relationship exists between each of the independent variables and the dependent variable and to indicate the strength and direction of such relationship (Argyrous, 2011).

Inferential statistics were used to further analyze the data. Argyrous (2011, pp. 283) defines inferential statistics as "*the numerical techniques for making conclusions about a population based on information obtained from a random sample drawn from that population"*. Analysis of Variance (ANOVA) also referred to as the F-test was carried out to test the significance of the overall model chosen for the study. The researcher tested the various research hypotheses at a confidence level of 95%.

4. RESEARCH FINDINGS AND DISCUSSIONS

4.1.1 Production cost

The first objective of the study sought to determine the influence of production cost on production reshoring decision among Kenya's manufacturing multinational corporations. The respondents were asked to rate the extent which they agreed or disagreed with the six aspects of production cost as they relate to production reshoring decision, influence of labour costs in current location (PC1); influence of increase in labour costs in offshore location (PC2); overall energy

costs influence (PC3); influence of increase in overall energy costs (PC4); increase in supply chain costs for inbound logistics (PC5) and productivity per worker (PC6).

The findings consistent with Fisch and Zschoche (2012) who found that rising labour cost significantly influences MNCs decision to reshore. Bailey and Propris (2014) found that rising labour costs in China and Central and Eastern Europe were driving U. K automobile manufacturers to reshore. On other production cost elements such as energy cost and supply chain cost, results for this study are consistent with findings from previous studies (Tate et. al., 2014; Needham, 2014). The Kenya Association of Manufacturers has been at the forefront of seeking government intervention on issues relating to high energy and labour costs as a means of addressing challenges facing manufacturing entities (KAM, 2012; Maina, 2014).

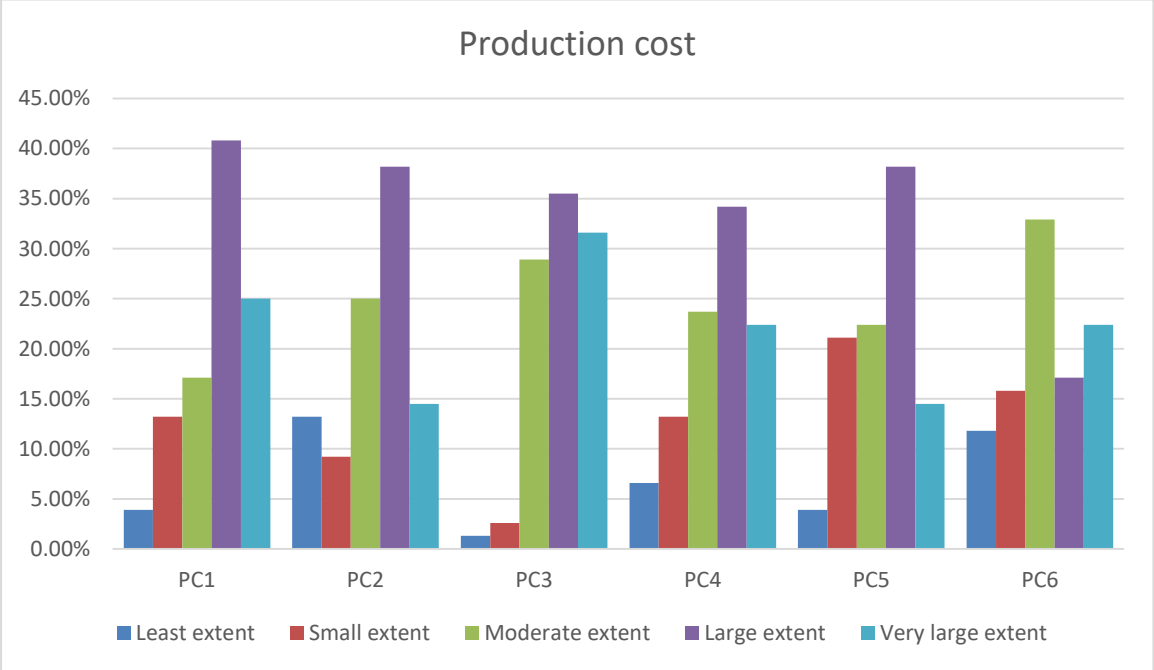

Figure 4.5: Descriptive statistics for production cost

Regression Analysis

The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that two variables are perfectly related in a positive linear sense, a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense, and a correlation coefficient of 0 indicates that there is no linear relationship between the two variables. In this study, correlation analysis was carried out between the variables using Pearson product-moment correlation coefficient both in the present of moderator and absence of moderator.

The findings show that the independent variable had a positive and significant correlation with each other but not all in the absence of moderator. Production cost had no significant relationship with each other. The finding also shows that there was no multicollinearity since all the correlation coefficient values were below 0.8 as suggested by Tabachnick and Fidel (2001).

Influence of Production Cost on reshoring decision

The first objective of the study was to establish the influence of production cost on reshoring decision among Kenya's manufacturing multinational corporations. Based on logistic regression between production cost and reshoring decision, the output was split into two sections, block 0 and block 1. Block 0 assesses the usefulness of having a null model, which is a model with no explanatory variables. The variables in the equation table only include a constant so every respondent has the same chance of saying Yes or No for the factors that determine reshoring decision among Kenya's manufacturing

multinational corporations. From classification table, it was clear that 56.6% of the respondents agreed that all the indicators under reshoring decision affect production cost (table 4.11).

Table 4.11: Classification table 1 for production cost

Observed			Predicted		
			Entrepreneurial Orientation		Percentage Correct
			No	Yes	
Step 0	Reshoring Decision	N0	0	33	.0
		YES	0	43	100.0
	Overall Percentage				56.6

a. Constant is included in the model.

b. The cut value is .500

Under variables in the equation table 4.12 the intercept-only model is ln(odds) =.2650. If we exponentiate both sides of this expression, we find that our predicted odds [Exp(B)] =1.303. That is, the predicted odds of those who agreed that indicators of production cost affect reshoring decision among Kenya's manufacturing multinational corporations were 1.303. Since 43 of the respondents said Yes while 60 said No, the observed odds was 43/33 = 1.303.

Table 4.12: Variables in the equation for production cost

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.265	.231	1.308	1	.253	1.303

The omnibus tests of model coefficients for production cost table gives the result of the Likelihood Ratio (LR) test which indicates whether the inclusion of this block of variables contributes significantly to model fit. A p-value (sig) of less than 0.05 for block means that the block 1 model is a significant improvement to the block 0 model. In the presence of moderator, the omnibus test still indicates that there was significance improvement of block 0 as indicated on table 4.13. From these findings we can conclude that production cost significantly affects reshoring decision among Kenya's manufacturing multinational corporations.

Table 4.13: Omnibus Tests of model coefficients for production cost

		Chi-square	df	Sig.
Step 1	Step	12.152	1	.000
	Block	12.152	1	.000
	Model (Without moderator)	12.152	1	.000
Step 1	Step	17.212	1	.000
	Block	17.212	1	.000
	Model (With moderator)	17.212	1	.000

In standard regression, the co-efficient of determination (R^2) value gives an indication of how much variation in dependant is explained by the model but this cannot be calculated for logistic regression but the 'Model Summary' table 4.15 gives the values for two pseudo R^2 values for two models (model without moderator and model with moderator) which try to measure something similar. From table 4.15, we can conclude that between 14.8% and 19.8% of the variation in reshoring decision can be explained by the model in block 1 without moderator and 20.3% and 27.2% of the

variation in reshoring decision among Kenya's manufacturing multinational corporations can be explained by the model in block 1 in the absence of moderator.

Table 4.14: Model summary for production cost

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Model 1	91.886[a]	.148	.198
Model 2	86.827[a]	.203	.272

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001. Model 1 (without moderator), Model 2 (with moderator)

The correct classification rate has increased by 14.5% to 71.1% in the absence of moderator and 10.5% to 71.1% in the presence of moderator as shown in model summary table 4.15 for production cost.

Table 4.15: Classification table 2 for production cost

Model	Observed		Predicted Reshoring Decision		Percentage Correct
			No	Yes	
Model 1 Step 1	Reshoring Decision	No	17	16	51.5
		Yes	6	37	86.0
	Overall Percentage				**71.1**
Model 2 Step 1	Reshoring Decision	1.00	17	16	51.5
		2.00	9	34	79.1
	Overall Percentage				**67.1**

a. The cut value is .500. Model 1 (without moderator), Model 2 (with moderator)

From the variables in the equation table 4.16, there was positive and significant relationship between production cost and reshoring decision. The model was given as $Y= -4.355+1.327X_1$ in the absence of moderator (market condition). The regression coefficient of 1.327 indicates that an increase in production cost by one unit leads to an increase in reshoring decision by 1.327 units. On the other hand, in the presence of moderator (market condition), the model was expressed $Y= -4.947+1.484X_1*Z$ showing that an increase in production cost by one unit leads to an increase in reshoring decision by 1.484 units. The p-values were 0.002 and 0.000 were recorded for both models.

Table 4.16: Variables in the equation for production cost

		B	S.E.	Wald	df	Sig.	Exp(B)
Step1[a]	Production Cost	1.327	.427	9.665	1	.002	3.768
Model 1	Constant	-4.355	1.499	8.437	1	.004	.013
Step1[a]	Production Cost*Z	1.484	.411	13.012	1	.000	4.412
Model 2	Constant	-4.947	1.476	11.232	1	.001	.007

a. Variable(s) entered on step 1: Production Cost Model 1 (without moderator), Model 2 (with Moderator)

5. CONCLUSIONS, RECOMMENDATIONS AND FUTURE RESEARCH

Influence of production cost on production reshoring decision

The findings of the study revealed that production cost has a significant influence on production reshoring decision among Kenya's manufacturing multinational corporations. From the findings production cost was found to have a positive and significant influence on reshoring decision. In the absence of the moderator (market condition), production cost explained 71.1% of the changes in reshoring decision. The percentage drops to 67.1% in the presence of the moderator. One unit increase in production cost resulted in an increase of 1.327 and 1.484 units of reshoring in the absence and presence of the moderator (market condition) respectively. The increase in Nagelkerke R^2 from 0.198 to 0.272 indicates that market condition had a moderating effect between production cost and reshoring decision. Recorded p value was 0.0017 without moderator and 0.000 with moderator which were below 0.05. The null hypotheses were rejected.

It was recommended that production cost drivers be closely managed by MNCs to ensure overall competitiveness of a country's manufacturing sector. Deliberate policy interventions on labour cost, energy and other supply chain costs are required mainly by the Kenyan government are required to realize the aspirations of Kenya's Vision 2030 on industrialization. Specific interventions such as investment in growth of renewable energy and cheaper energy sources is recommended.

Areas of Further Research

Available literature indicates the need to grow the body of knowledge on reshoring towards development of a reshoring theory. It is worth noting that the overall model of the study answers the question of production reshoring decision by 78.9%. Further research may be necessary to find out whether other strategic drivers for production reshoring exist.

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