
Reprocessing and Net Job Creation within Construction Firms in Bayelsa State.

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Abstract

The purpose of this study was to empirically investigate the influence of reprocessing on net job creation within construction firms in Bayelsa State, Nigeria. One hundred and eight-five (185) copies of questionnaire were administered to respondents. After retrieval and data sorting, one hundred and forty-three (143) copies were subjected to data analysis. The hypothesis was tested utilising simple regression method. After the data analyses, the major finding was that: Reprocessing has a positive and significant influence on the net job creation within construction firms in Bayelsa state. The main conclusions drawn from the results of our empirical analysis are that reprocessing has a positive and significant influence on net job creation within construction firms in Bayelsa state. Based on the findings and conclusions, this study recommended that construction firms should continue to enhance their reprocessing capabilities thereby developing specialised jobs and greater internal idiosyncratic competencies which will continue to improve overall social bottom line performance. An improvement of their social bottom line performance improves brand image which in turn results in the advancement of competitive advantage.

Introduction

According to Chilese et al (2012), the construction industry represents 13% of the global economy and this represents great significance to the global infrastructure. This industry has also greatly lagged in embracing and accommodating sustainability concerns. As a research topic, reverse logistics (RL) has attracted the attention of corporations, industry professionals, governments, and the academia. This growing interest in RL in the business community is evidenced by an increase in the level of related activities in leading sectors such as transport, consumer electronics, textiles, as well as the press and media (Vestrepen et al, 2007). Research on the current state of RL and its influence on the social performance in the construction industry of Nigeria, remains scarce. Thus, establishing frameworks, and identifying action items with the greatest potential to enhance RL use in the construction context is greatly significant. Considering that the end product of the reverse logistics chain is value reclamation, it becomes imperative to study what these recovery processes are and how these reclamation/recovery processes can be used to justify the reasons for embarking on RL. The traditional recovery processes include, direct reuse, recycling, reprocessing (remanufacturing, refurbishing, repairing) and waste disposal. Other recovery processes especially in the construction industry include design for deconstruction, design for disassembly, design for reverse logistics.

The purpose of the study was to examine the influence of reprocessing (one of the dimensions of reverse logistics) on net job creation (a measure of social performance) in the construction firms in Bayelsa State, Nigeria. In order to achieve this, the following objective was considered specifically: *To ascertain the influence of reprocessing on net job creation in construction firms in Bayelsa state.*

Consequently, the following research question was posed: *Does reprocessing significantly influence net job creation within construction firms in Bayelsa state?*

This study will provide a basis for the enhancement of construction operations within the country to catapult indigenous firms to be competitive participants on the global front. This study will be highly beneficial to policy makers, industry professionals and academics as its findings will provide useful knowledge that can be used in policy making, industry practices and a background for further research. The scope of this study was simply to investigate the relationship between reprocessing and the net job creation specifically in construction firms in Bayelsa state. The geographical scope of the study was limited to Bayelsa state. It cut across thirty-six (37) construction firms in Bayelsa state. The unit for analysis in this research was the macro level of analysis.

Resource dependence Theory.

The baseline theory which underpins this research is the resource dependency theory. The resource-based theory cuts across all facets of management and continuous to be a building block for innovation and continuous development within firms. Resource based theory otherwise known as resource based view (RBV), states that a “firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness (Barney, 1991).” The RBV underscores the importance of accumulating, reconfiguring, and deploying valuable, rare, inimitable, and non- substitutable knowledge, skills, and assets (Auh & Menguc, 2009). These resources are mostly tacit and idiosyncratic in nature, such that they are embedded and inscribed in the social fabric and culture of the organisation (Auh & Menguc, 2009). Applying the RBV to the application and adoption of RL, we can argue that firms adopting RL increase their capabilities and attributes. Internalisation of RL may also give them greater sustainable competitive advantage and it may affect firm’ overall triple bottom line performance. The implications of RBV in the RL concept may also promote the argument that adoption of RL could enhance performance in multiple dimensions through both improvement and betterment. The adoption of RL can be seen as innovation i.e. through constant reinvention, transformation, and exploitation of capabilities alongside complementary resources to prolong and extend their effectiveness, thereby preventing depletion, and forcing competitors into a “catch up” mode.

This process can transform generic input factors into firms’ idiosyncratic capabilities/competencies that enable firms to coordinate activities and make use of their resources more effectively (Amit and Schoemaker, 1993). The more a capability is utilized, the more it can be developed, refined and the more sophisticated and difficult to imitate it becomes. As such, the developed capability could improve a firm’s overall market position and sustainable performance.

Reprocessing encompasses the RL recovery processes where a significant amount of work is done to get the product back to its original form and standards. As part of reprocessing, product manufacturers refurbish, remanufacture, or repair products before they are either sent back into the forward supply chain, or sold as spare parts to secondary markets. According to Dhanajaya (2008), “Reprocessing can occur at different levels: product level (repair), module level (refurbishing), component level (remanufacturing) and selective part level (retrieval).”. This process extends the end of use time frame of a product and occurs when a product cannot be directly reused.

End of use: refers to when a product has come to the end of its initial use by its first or original user. A product at its end of use stage still has value that can be reclaimed especially in a secondary market. A product at this stage experiences two S-curves. A first s-curve in the primary user and a second S-curve in the secondary market. A typical example is used cars that sold as secondhand cars.

Net job creation (NJC) refers to the total jobs created because of a government or firm’s business activities. It is prescribed by the United Nations global reporting initiative as a social measure, to be used for the evaluation of triple bottom line performance.

The issue of job creation is a prevailing global issue, and it is very evident in the Nigerian case and it falls under the social spectrum of the triple bottom line agenda. Job creation is necessary for the elimination of unemployment, reduction of crime in the society, increased productivity, increased social capital, wealth creation, quality of life, fulfilment, and other human/societal benefits (Nikolau et al, 2013).

Even though critics may choose to differ on this subject, business is part of society (Elkington, 1998). Governments try to regulate, control, and mitigate the social interactions to industry and commerce; however, global history is filled with examples where social agendas were created outside the interwoven worlds of governments and corporations (Elkington, 1998). A lot of times, corporations have found their operations being constrained by emerging social movements and examples of such social movements include crusades against slavery and the various campaigns to end child labour in European and North American factories, business people have long found their freedom of action being increasingly constrained by emerging social movements (Elkington, 1998).

As the momentum of globalization increases, the interface between the economic and social bottom lines becomes increasingly challenging. An instance of such a challenge was the abortive attempt by Germany's Krupp Hoesch to take over its rival Thyssen (Elkington, 1998). Even though this takeover attempt was geared towards enhancing the German steel industry by making it more competitive in the face of intensifying international competition; it was faced with massive rallies by steelworkers concerned about the implications for their jobs and protesting against 'casino capitalism' and calling for 'people before profitability' (Elkington, 1998). Eventually, Krupp and its partner banks - Deutsche, Dresdner, and Goldman Sachs - backed down (Elkington, 1998).

The Triple Bottom Line Performance.

Whenever the triple bottom-line is mentioned, it is basically describing sustainability as defined by Elkington (1994). In the past, sustainability performance of firms was defined from the perspective of being economically viable and being able to stand the test of time. However, sustainability is now defined in terms of the triple bottom line, which refers to the viability of firms from the perspectives of economic performance, social performance, and environmental performance. “The triple bottom line (TBL) also known as people, planet and profitability or the three pillars, captures an expanded spectrum of value and criteria for measuring organizational success in terms of economic, ecological and social performance” (Elkington 1994). In the year 1998 Shell, the world's oldest and largest oil multinational, issued a report about its values, with the challenging title: Profitability and Principles - does there have to have to be a choice? (Elkington, 1998). This long standing multinational set out to describe "how we, the people, companies and businesses that make up the Royal Dutch/Shell Group, are striving to live up to our responsibilities - financial, social and environmental" (Elkington, 1998). There is no coincidence regarding the three areas of responsibility highlighted by the report as they represent the elements of an equation for assessing and expressing the worth of a company in terms of its 'sustainability' (Elkington, 1998). It is also not coincidental that this value formula, dubbed the 'triple bottom line', is being trailed publicly by Shell and other large corporations. Governmental and societal pressure forced Shell to address the question posed on the cover of Shell's report (Elkington, 1998). Consequently, in Shell's case the highest pressure came after the twin damage it sustained in the mid-1990s on the environmental front, over the disposal of an oil rig in the North Sea, and politically, from its association with the, then repressive government of Nigeria (Elkington, 1998).

As a result of this mounting pressure, Shell formed a social accountability team which commenced working with ‘Sustainability’, the pioneering UK-based environmental consultancy, to make the triple bottom line day to day management reality within the corporation (Elkington, 1998). With the development of the United Nations standard for urban and community accounting in early 2007, this has become predominant approach to public sector full cost accounting (Okafor, 2013). The concept of accountability refers to the provision of information to stakeholders, information that can be verified to build trust in its value, as the foundation of social, environmental and economic performance (Okafor, 2013). Sustainability performance, defined broadly here as the “triple bottom line performance” (Elkington, 1994), is made up of three spectrums of organisational performance.

- Social (i.e. people) - the most immature form,
- Environmental performance (i.e. planet) and
- Economic (or financial) performance (i.e. profitability).

There are several measures of triple bottom line performance which fall under each of these three spectrums of triple bottom line performance (Nikolau et al, 2013). The global reporting initiative which will be discussed in a later section lists several of these measures of triple bottom performance under their different spectrums. To this study, profitability, net job creation and waste reduction will be used as measures representation the economic, social, and environmental spectrums, respectively.

The triple bottom - line performance perspective broadens the conventional economic performance metrics to include a wider set of impacts and performance measurement for organizations. In other words, TBL performance means expanding the traditional framework to consider ecological and social performance. However, the issue of how to measure such diverse parameters encompassing diverse fields exists and is directly reflected in this sustainability analyses. This concept of organisational accountability/performance measurement also requires a different kind of assessment for sustainable development which has been defined strategically in the Brundtland Report as: development that meets the needs of the present without compromising the ability of the future generation to meet their own needs. The conventional organisational performance reporting provides rational actors (typically shareholders and other financial market participants) with the information and/or incentives to pursue their economic self-interest (Okafor, 2013). Consequently, the actors move funds from less economically desirable ends towards more economically desirable ends and thereby encourage the development and innovation of “better economic activities through the maintenance and stimulation of competition” (Hines 1984). These activities and processes are what produces economic growth and as the economy grows the profitable firms grow larger and even more profitable and investors become even richer. Thus, “it floats all boats” because of the trickle-down theory, in that the spending by the rich ensures that all people are financially better off (Okafor, 2013). The state of the welfare of the richer becomes significantly improved. Consequently, based on these assumptions, it becomes evident that the empowerment of the rational investor will lead to improved welfare for all.

Paradoxically, for many authors, this statement has a superficial veracity, as it ignores the increased gap between higher class and the lower classes. The assertion also, ignores the increasing levels of defensive expenditure that the economically successful feel compelled to undertake (Robertson, 1990; Ekins, 1992) and it almost completely ignores the increasingly parlous state of the environment (Meadows et al, 2004). Another criticism often levelled against the existing performance measurement parameters has emerged from the history of accounting (Okafor, 2013). Okafor, (2013) argues that “accounting has been co-opted by the bureaucratic function within organizations in a largely successful attempt to create an internal control mechanism.” Okafor (2013) also argues that the investor owner community has “hijacked” a limited set of purely financial measures to judge their own narrow definition of successful performance. Consequently, the function of accounting has developed a limited and often negatively connoted meaning and there are some scholarly arguments that propose grounds to suggest that the hegemony of financial accounting used without a wider perspective of accountability is gradually becoming discredited (Okafor, 2013).

The investment mode of firms has been severely criticised because of the absence of broader accountability and performance parameters in place through company or regulatory practices (Okafor, 2013). One of such issues relating to investing in organizations that simply report financial information is cited in a research by New Consumer of 128 UK companies (Chryssides & Kaler, 1993). The research identifies thirteen (13) categories of ethical issues that are not captured within the current “classical” economic performance reporting. These issues are disclosure of wide information, pay, benefits and conditions, equal opportunities, community involvement, environment, other countries, respect for life, political involvement, and links with oppressive regimes, military sales, and marketing policy. From a different perspective, Carroll (1991) had earlier discussed corporate social responsibility by presenting a wide model (pyramid) that incorporates four levels of responsibilities from the bottom level which include economic responsibilities (being profitable) and to the upper level which includes philanthropic responsibilities (being a good corporate citizen). The remaining two levels are the legal (obeying the law) and ethical responsibilities (being ethical). Currently, CSR activities are of grave importance for the business community as they are now considered as the most responsible players for tackling socio-economic and environmental problems as well as being providers for efficient solutions of a sustainable future. However, the understanding and distinctions of the terms CSR and corporate responsibility are sometimes elusive as there are several definitions of them with varying meanings (Nikolau et al, 2013).

This confusion and ambiguity is presented by the diversity of concepts such as “corporate citizenship, business ethics, corporate social responsive- ness, corporate sustainability, eco-efficiency, social performance and corporate social responsibility” (Nikolau et al, 2013). Currently, these definitions generally include terms such as “ethical, social, environmental and economic issues such as marketing, management, public responsibility, stakeholder management, social performance, and environmental performance” (Nikolau et al, 2013). Even though, there are various definitions, most scholars agree that the concepts of CSR, corporate sustainability and TBL are similar as they preach promotion of economic efficiency, environmental management, and social justice. As earlier mentioned, the concept of TBL was coined by Elkington (1997) who empathetically stressed the distinction of the economic and social dimensions of sustainability, which were overshadowed by the environmental dimension of sustainability. The TBL theoretical context envelopes the concepts of CSR and corporate sustainability and is an ideal tool for the development of a social responsibility evaluation framework for the sustainability of supply chain management (Tschopp, 2005; Presley et al., 2010). In this regard, the first evaluation dimension is related to the economic contribution of businesses to stakeholders such as shareholders, employees, and the immediate community (e.g. GDP). In the reverse logistics, Presley et al. (2010) highlight various economic indicators which are categorised in four classes: “strategic factors (e.g. cost reduction, the maintenance of superior financial performance, tactical aspects (e.g. disposal costs, expenditures) and operational matters (cash to cash cycle time, customer returns, energy consumption).” The second evaluation dimension relates to internal environmental management considerations and external natural resources conservation matters (Nikolau et al, 2013). The key idea is that certain reverse logistics practices such as recycling, re-manufacturing, and reuse should encourage businesses to significantly

reduce their impacts on the natural environment through waste reduction (Nikolau et al, 2013).

Finally, the third evaluation dimension comprises of quality and ethical issues relating to risk management concerns, health and safety (H&S) and employment issues (Nikolau et al, 2013). In the available reverse logistics literature, “social and ethical dimensions of sustainability are emerging topics” (Sarkis et al., 2010). Carter and Jennings (2002) highlighted certain categories as essential aspects of the social dimension and they are: “ethics, diversity, working conditions, human rights, safety, philanthropy and community involvement.”

Reprocessing and net job creation

Considering that discussions on the social spectrum TBL are scarce, the relationship between the reprocessing and the net employment creation of firms is blurry. However, Nikolau et al (2013), in their study carried out in Greece, titled “A reverse logistics social responsibility evaluation framework based on the triple bottom line approach” found that the adoption of reprocessing implies creation of specialised jobs associated with reprocessing and this affects the net employment creation. However, in contradiction to this assertion, the study carried out by Lai et al (2013) in China, titled, “Did reverse logistics practices, hit the triple bottom line of Chinese manufacturers?”, categorically states reprocessing does not visibly contribute to the net employment creation within firms as most of their reprocessing activities are automated. The research work carried out by Agrawal et (2016) in India also concurs with the assertion as their findings suggest that there is no visible indication that reprocessing affects the net job creation within firms. However, for the empirical study, the following hypothesis was proposed: ***Reprocessing has no significant impact on net job creation in construction firms.***

Methodology.

The survey research strategy was adopted for this research. The explanatory research design through application of hypotheses testing, was utilised for this study. The hypotheses testing in a natural setting (construction firms) was utilised for this research because of its suitability for a causal investigation. The time horizon of this research was cross sectional as this research studied a phenomenon at a given time. This study was characterised by the collection of standardized data from a sample selected from a population. The utilised sample is a representation and indication of the key characteristics of the population from which it was drawn. The study made use of quantitative research methods. This study is a macro-level study and thus it was carried out on an organisational level rather than an individual level. The population of the study was 37 firms. The population comprised of firms duly registered with the Bayelsa state ministry of works as contractors, who must have carried out at least two major construction projects (summing up to at least 500million naira) or a single project worth over 500million naira for the Bayelsa state government in the last 8years (dating back from the time of

this research). In addition to the threshold amount, the categories of the government funded projects that qualified firms to be considered as eligible for study included: office complexes, skyscrapers, airports, design & consultancy, shopping centres, court houses, sports facilities, retaining walls, shoreline protection, hospitals, schools, universities, bridges and highways). The entire population of the study was adopted as the sample size of this study. The sample size of the study was 37 construction firms. The respondent population was five (5) respondents per firm, bringing the total number of respondents to one hundred and eighty-five (185). Primary data was used throughout the course of this study. The research instrument (i.e. questionnaire) was constructed in a five-point Likert scale with options ranging from strongly disagree to strongly agree. The research instrument was tested for reliability using the Cronbach Alpha coefficient with the aid of the Statistical Package for Social Sciences (SPSS) version 23. After the collection of data, reliability test was done to test inter-item consistent reliability using a Cronbach alpha coefficient of 0.7 as the threshold as recommended by Nunnally (1978). This study made use of simple regression analysis, to establish the significance and level of influence between the criterion and predictor variables. It enabled us to respond to the research question. The Statistical Package for Social Science (SPSS) version 23.0 was utilised in the statistical analysis of this study. The decision criteria utilised were based on the following rule of the thumb:

If the p-value is less than 0.05, reject Null Hypothesis; otherwise, do not reject.

As earlier mentioned, our sample consists of 37 firms with five copies of questionnaire allocated to each firm bringing the copies of questionnaire administered to 185. These 185 copies of questionnaire were distributed to 185 employees across the 37 firms and out of this number one hundred and sixty (160) copies of questionnaire were retrieved. Furthermore, after error assessment, 17 copies were observed to have different categories of issues that render them inadequate for use. These issues range from blank sections, to missing pages and incomplete data. After preliminary assessments 143 copies of questionnaire were found to be in order and was therefore adopted as the representative sample for the study. This value represents approximately 77% of the total copies of questionnaire distributed. This number of acceptable retrieved questionnaire was found to cut across 37 firms out of the 37 firms. This represents a 100% participation on the firm level i.e. an 100% firm participation.

Bivariate Analysis.

Table 1 reports the regression analysis of the influence of reprocessing on net job creation in construction firms. Table 1 displays the regression analysis of the influence of reprocessing on net job creation within construction firms in Bayelsa state.

	Variable (Model)		
		Beta Coefficient	P-Value
	Constant (NJC)	11.901	0.000
	REP	0.293	0.001
R. 0.275a	R-Square 0.076	Adjusted R-square 0.069	Std. Error of the Estimate (F-Statistics) 2.155

Source: SPSS version 23 outputs

Table 2 displays the Anova statistics of the linear regression highlighting the regression fit of the predictor variables and the criterion variable.

Table 2 Anova of the linear regression

model	Sum of Squares	df	Mean Square	F	Sig.
1					
Regress ion	53.601	1	53.601		
				32.582	0.001 ^b
Residua l	654.609	141	4.643		
Total	708.210	142			

Source: SPSS version 23 outputs

a. Dependent Variable: NJC. b. Predictors: (Constant), REP

Table 2 indicates that the regression model predicts the dependent variable significantly. It shows that $p = 0.000$, which is less than 0.05, and this implies that the regression model (reprocessing) statistically significantly predicts the net job creation, and this means that regression is a good fit for the data.

Hypothesis 01

H_{01} Reprocessing does not significantly influence net job creation within construction firms.

Table 2 also referred to as the coefficient table provides the necessary information regarding the relationship between reprocessing and net job creation. It also helps us determine whether reprocessing contributes statistically to the model by looking at the significant column. To represent the regression equation on the prediction of the influence of reprocessing on net job creation, we look at Table 4.16a and the regression equation is shown as:

$$\text{Net job creation (NJC)} = 11.901 + 0.293 (\text{reprocessing})$$

From table 2 the F-statistic, which tests the joint significance of all the included regressors, has a probability value which is less than 5% (p -value = 0.001), suggesting that the estimated pooled regression and hypothesis nine for net job creation is statistically significant. The R-squared value of 0.076 indicates that about 7.6% of the changes in the net job creation within the selected construction firms are accounted for by the influence of reprocessing. While the remaining 92.4% changes that occur in net job creation can be explained by other variables beyond reprocessing. Furthermore, as indicated in table 1, all the variables have positive coefficients. The coefficients of 0.293 suggest that reprocessing has a positive influence on net job creation with a significant coefficient (p -value = 0.023).

Decision Rule:

Reject H_{01} if the p -value is less than 0.05. Otherwise, do not reject H_{01} .

From table 1, the associated p -value of the t-statistic corresponding to REP (reprocessing) is 0.001 which is substantially lower than the stated 0.05. Therefore, we firmly reject the stated null hypothesis. Rejecting the null hypothesis implies that the reprocessing has a significant and positive influence on the net job creation within construction firms.

The Influence of Reprocessing on Net Job Creation within Construction Firms in Bayelsa State.

The results of this study suggest that reprocessing has a positive and significant influence on net job creation within construction firms. This leads us to reject the null hypothesis which states that reprocessing does not significantly influence net job creation within construction firms in Bayelsa state. This implies that reprocessing has a significant and positive influence on the net job creation within construction firms. This result is consistent with the findings from earlier studies such as that of Nikolau et al (2013), which found that the adoption of reprocessing creates specialized jobs associated with reprocessing and this affects the net employment creation. However, in contradiction to these findings, Lai et al (2013), discovered that in the scenario of their study, reprocessing does not create jobs as most of their reprocessing activities were found to be automated. The disparity in findings can be attributed to firm operation's strategy and activities as well as their technological levels of automation.

To summarize our findings and in relation to previous studies, we can categorically state that the adoption of reprocessing results in job creation and an improvement in the overall social bottom line performance.

Conclusion and Recommendations.

The main conclusions drawn from the results of our empirical analysis are:

Reprocessing has a positive and significant influence on net job creation within construction firms in Bayelsa state.

Theoretically, the findings of this study support the resource-based theory which suggests that the development of the internal competencies by firms (in this case construction firms) leads to the development and maintenance of competitive advantage. An improvement in the social performance of a firm improves the brand image as well as their social currency, therefore, the adoption and development of reprocessing competencies leads to creation of specialised jobs which in turn boosts the corporate image of the firm and this improves the basis for competition. This study recommends that construction firms should continue to enhance their reprocessing capabilities thereby developing specialised jobs and greater internal idiosyncratic competencies which will continue to improve overall social bottom line performance.

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