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An Assessment of Supply Chain Management of Zuma Bricks, Gusau, Zamfara State

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ABSTRACT
The work centered on the assessment of supply chain management of Zuma Bricks Nigeria Limited. The study attempts to assess the organization's present supply chain management practice and its impact. The need to have an edge over competitors and enhance customer's satisfaction by reducing cost and improve quality service delivery was the key issues that necessitated this research. The study identified the product of the company. The data were collected from the staffs of the company. An interview was conducted with the production manager of the company and thirty-four (34) questionnaires were administered to all the company staff while twenty-five (25) filled questionnaires were returned. The data was analyzed using descriptive statistics and results presented in form of tables. The result revealed that the organization's supply chain strategy can be characterized as a push-based supply chain strategy which is slow to react to market changes, therefore stock-outs or excess inventory are common with high transportation and production cost. Findings also revealed that the company production strategy is Make-to-Stock (MTS).On the basis of the of the findings mentioned above, the recommendations are: the company should adopt a Pull-based supply chain strategy which is based on a true customer demand, where the company doesn't need inventory because the supply process is triggered by customer order; distribution and sourcing material function should be outsourced to a third party company to cut cost and share risk; professionals in the field of supply chain management Should be employed and consistently train its staffs on current supply chain management practice.

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INTRODUCTION

Due to the increase in global business competition, some organizations are looking for methods to have edge over their competitors. Vonderembse et al (2006) states that business has shifted from organization orientation to supply chain, thus supply chain success is now a requisite for survival. In the 1990s, with the improvement of organizational capabilities, Managers realized the ability to meet customer needs. Managers are aware that manufacturing a quality product was not enough. Taking products and services to customers, in the required and quality and at optimal cost has constituted a new challenge. Due to these changes, industries have realized that its involvement in the management of suppliers that provides inputs is of great importance. Organizations are now more concerned with the network of delivery and market of its product to suit customer satisfaction (Bailey et al, 1994). Logistics is the movement of materials from suppliers, within the organization and out to the consumer or customers.

The smooth operations of these logistics flows are essential for the effective management of supply chain. These functions need to be managed in such a way that they maximize their contribution to the management of the supply chain and that all non – value adding activities are eliminated. Supply chain management is the integration of supply chain activities through modified relationships to get a lasting competitive edge (Monezka, 2002). It involves the technique of the goods and service. Planning is needed in the development of a set of measurements to track the supply chain so that it is cheap and gives degree of importance to customers.

Materials are the most important and essential commodity needed for the day to day running of an industry or company. However, most companies have entrusted and let-out the functions of supply management into the hands of mediocre,

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who have no formal educational knowledge or background nor even the purchasing skills required to enhance the company's profitability. Also, it is well known that supply chain management is an integral part of most businesses and is essential to a company success and customer satisfaction.

Companies are faced with different threat from both customers and competitors in the reduction of cost and provide quality products with high degree of importance to the consumers. (Roh et al., 2014). Globalization is making industries to reduce the amount of products they produce and the time it will take to produce at a lesser price. As a result, the life cycles of product are reducing and product are giving consumers more choices to make (Gmelin & Seuring, 2014).The main aim is to maintain or improve the product market value is becoming very difficult due to competition in the global market. This paper seek to assess the supply chain management of Zuma bricks, Gusau for its efficient corporate performance.

METHODOLOGY

The study area for this research is Zuma Bricks Nigeria Limited in Gusau metropolis. Gusau, is situated along river Sokoto in the tropical grassland northwestern part of Nigeria. The Sokoto River serves as a source of water supply for the populace of Gusau during the dry periods. Gusau is one of the major commercial cities of northwestern Nigeria. The manufacturing industries in Gusau includes, a groundnut and oil mill, a tobacco processing company, a textile company and a lot of cotton ginning companies. Gusau is blessed with a lot of Gold deposits. The city is connected by rail to different parts of the Country.

Cotton and peanuts are the major cash crops grown in Gusau. Majority of the indigent people are into rearing of sheep, camels donkeys, cattles, horses and they predominantly trade in cowpeas, rice, sorghum and vegetables

Figure 1: Map of Gusau

The descriptive research plan or design was used in this research. It describes and interprets what is and seeks to find out the term that exists, things that are evident, or trends that are developing. The materials research used for the description is personal interview and questionnaires.

The sample size is 34 employees in the following functional areas: purchasing, storage and

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warehousing, production, and distribution. This choice of sample size was informed by the number of employee in the selected functional areas that cover the supply chain management in the organization. The simple random sampling was used to select the research respondents, so that all groups of the population have equal chances of being selected.

For this study the questionnaire and scheduled interview were used. The questionnaire consists of structured questions; consequently, an interview is scheduled with the supply chain manager/ manager. The researcher administered and retrieved the questionnaires. Thirty four (34) questionnaires were administered and twenty five (25) was gotten back. An interview was conducted with the production manager. The data was used for analysis.

The techniques for data analysis for this research work is statistical procedures using the SPSS packages, which included statistical tables, frequencies and percentages, descriptions that would be considered adequate and appropriate for the purpose of precision and clarity. The analysis and interpretation is how the research problems were solved.

RESULTS

Interview on General Question

General Questions	Response
Activities/areas under supply chain management in your company?	Purchasing, storage, production, customer service, transportation and marketing.
How do you plan / schedule production in your company? Is it Make To Order (MTO)? Make To Stock (MTS)?	Make-to-stock (MTS)
Does your company have a distribution center that handles the receiving, sorting organizing and distributing its products? If No,	Yes
Does it outsource this function to a dedicated Third Party Logistic company?	No
Does your company source there raw material themselves or through third party	Ourselves
How is the demand for your product? Is it seasonal or trend?	Trend
Does your company have documented and commonly understood supply chain strategy which aligns with it goals?	No
How many standardized products do you produce?	Two (Building and Interlock bricks)
How many unstandardized products do you produce?	Depends on customer request
Do you have bill of materials (BOM) for all your products?	Yes
How many inventory storage facilities do you have and what is the size of each storage facility?	Two, one for the building bricks which takes 9000 to 10000 bricks depending on size and the other for interlocks bricks which takes 12000 to 13000 depending on size.
Do you use material requirement planning in your production system?	Yes
What is the capacity of your production system? Available workforce? Available equipment's	We have 34 staffs and have equipment which can produce 7000 to 8000 bricks (Building and Interlocks) per hour.

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Years of Experience of Staff

Figure 2 shows the years of experience of staff. Seven (28%) have work experience of less than 5 years, ten (40%) have experience less than 10 years, while eight (32%) have experience more than 10 years.

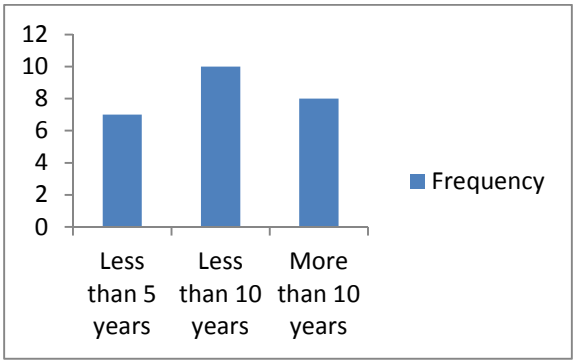

Figure 2: Years of Experience of Staff

Forecasting Purchasing, Sales, and Demand before Production Is Carried Out

Figure 3 shows the forecasting purchasing, sales and demand before production of the company. Four (16%) of the company's staff said the company always forecast before production is carried out, fifteen (60%) of the staff said the company often forecast, while five (20%) said sometimes the company forecast before production is carried out and one (4%) of the staff said the company rarely carryout forecasting before production is made. I further interacted with the production manager and he confirmed the company's often carryout forecasting before production. Therefore the company forecast purchasing, sales and demand before production is carried out.

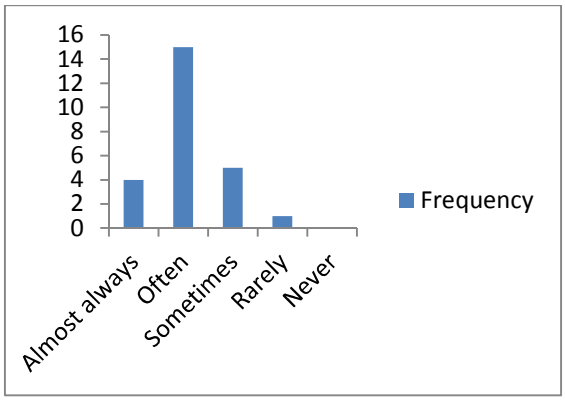

Figure 3: Forecasting purchasing, sales, and demand before production is carried out

Frequency of Collaboration and Getting Feedbacks from Customers

Figure 4 shows the frequency of collaboration and getting feedbacks from the customers. Nineteen (76%) of the staff said almost always, the company collaborate and get good feedbacks from their customers. Three (12%) of the staff said they often collaborate and get feedbacks from their customers. While one (4%) of the staff said that sometimes they get feedbacks, one (4%) also said they rarely collaborate and get feedbacks and one (4%) said they never collaborate and get feedbacks from their customers. Therefore, the company collaborates and get feedbacks from their customers.

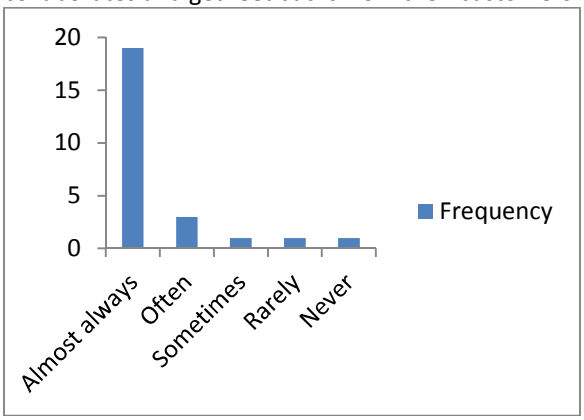

Figure 4: Frequency of collaboration and getting feedbacks from customers

Assessing Company's Collaboration/Relationship with Its Suppliers

Figure 5 shows the assessing company's collaboration/relationship with its suppliers. Fourteen (56%) of the staff said the company excellently collaborate with its suppliers. Four (16%) said the collaboration and relationship between the company and its suppliers is above average. Two (8%) rate the collaboration and relationship as average, while three (12%) said it's below average, two (8%) said the collaboration/relationship is very poor. Therefore, the company's collaboration/relationship is rate excellent.

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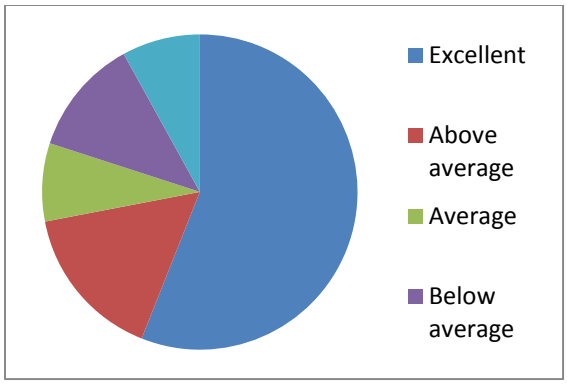

Figure 5: assessing Company's collaboration/relationship with its suppliers

Fluctuating Fuel/Energy Cost Affecting Operating Cost

Figure 6 shows the fluctuating/energy cost affecting operating cost. Seventeen (68%) of the staff said that almost always fluctuating/energy cost affects the company's operating cost. Six (24%) of the staff said often the fluctuating/energy cost affects the operating cost, while two (8%) said the fluctuating/energy cost rarely affects the operating cost. My further interaction with the production manager confirmed that the company's operating cost is affected by the fluctuating fuel/energy cost because the company mainly depends on a generator to power its equipment. Therefore, fluctuating fuel/energy cost affects the company's operating cost.

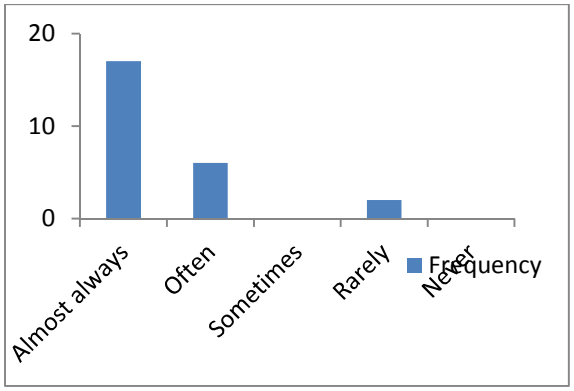

Figure 6: Fluctuating fuel/energy cost affecting operating cost

Customers Complain of Delayed Product Delivery

Figure 7 shows customers complain of delayed product delivery. Four (16%) of the staff said sometimes, customers complain of delay product delivery. One (4%) said customers rarely complain of delayed product delivery, while 20 (80%) of the staff said customers have never complained of delayed product delivery. Therefore, customers have never complained of delayed product delivery on the company's product.

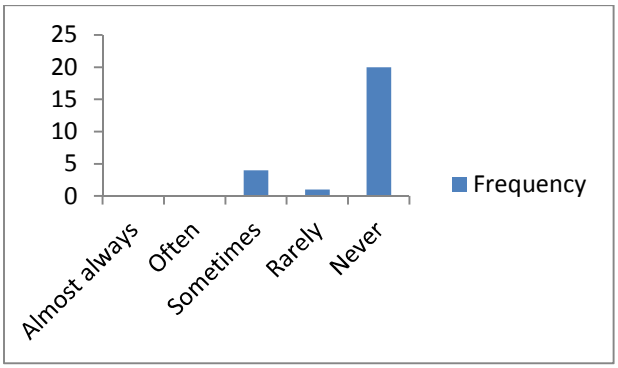

Figure 7: Customers complain of delayed product delivery

Demand of Product Outweigh Capacity/Resource Available

Figure 8 shows the demand of product outweighing capacity/resource available. Two (8%) of the staff said often times, the demand of the company's product outweighs it production capacity. Six (24%) of the staff said sometimes the demand of their product outweighs their capacity. Fourteen (56%) said they rarely get demand that outweighs their capacity/resource available. Three (12%) said they never get demand that outweighs their resource availability. My further interaction with the production manager confirmed that they rarely get demand which outweigh their resources available.

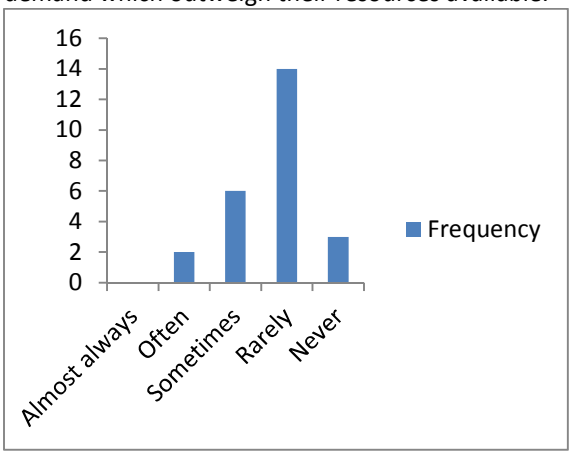

Figure 8: Demand of product outweigh capacity/resource available

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Extent It Outweighs

Figure 9 shows the extent it outweighs. One (4%) of the staff said the demand of the company's product extremely outweigh their capacity. Three (12%) said there is a very big gap between the demand for the company's product and the resources available. Four (16%) said the demand is moderately high when compared to the capacity/resources of the company. Ten (40%) said there is slight difference between the demand of the company's product and the resource available. While seven (28%) said the demand for the company's product does not outweigh the resources available. Therefore, the demand for the company's product slightly outweighs their production capacity.

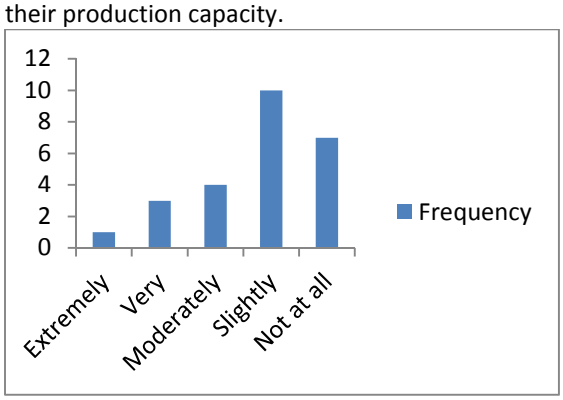

Figure 9: Extent it outweighs

Return of Defective Bricks

Figure 10 shows the return of defective bricks. Two (8%) of the staff said sometimes they get return of defective. Nineteen (76%) of the staff said they rarely get return of defective bricks from their customers. Four (16%) said they have never get return of defective bricks. Therefore, the company rarely gets return of defective bricks. The logistic manager said they get defective bricks due to bad roads when delivery the bricks. Therefore, the company rarely gets return of defective bricks.

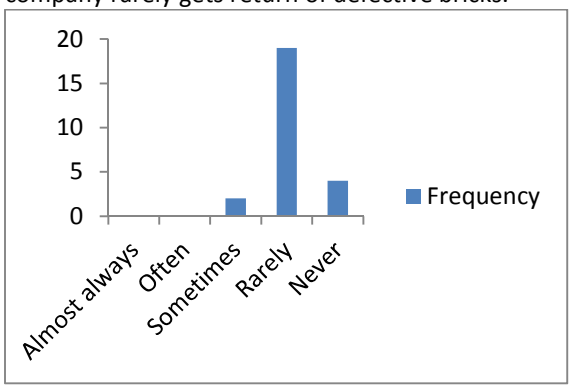

Figure 10: Return of defective bricks

How Large the Returns

Figure 11 shows how large are the returns of defective bricks. Two (8%) of the staff said the return of defective bricks is moderately large, sixteen (64%) said the return is slightly large, while seven (28%) said the return is not large at all. Therefore due to bad roads network around the region, the return of defective bricks is slightly large.

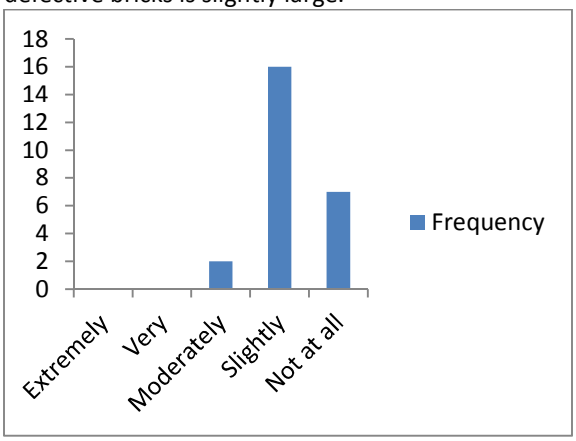

Figure 11: How large the returns

Insecurity in Zamfara State Affecting Production

Figure 12 shows the insecurity in Zamfara State affecting production. Two (8%) of the staff said sometimes insecurity affects the production of the company, three (12%) said insecurity rarely affects the production of the company. Twenty (80%) of the staff said insecurity has never affect the production. Therefore, insecurity never affects the production. The company is secured by heavily armed security personnel.

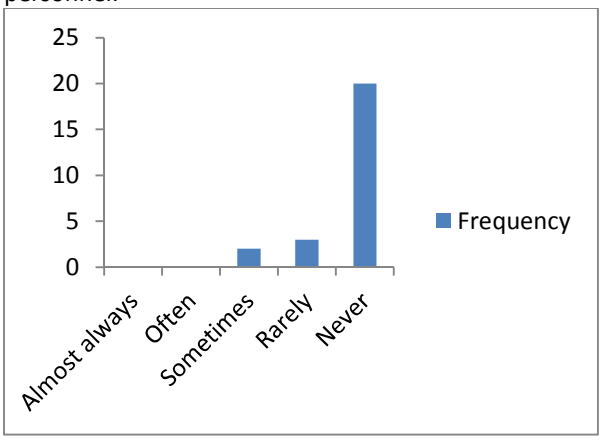

Figure 12: Insecurity in Zamfara State affecting production

Company's Relationship with Its Suppliers

Figure 13 shows the company's relationship with its suppliers. Nineteen (76%) of the staff said the

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company has a very good relationship with its staff, four (16%) said the relationship between the company and its suppliers is good, while two (8%) said the relationship is fair between the company and its suppliers. Therefore, the company is having a very good relationship with its suppliers.

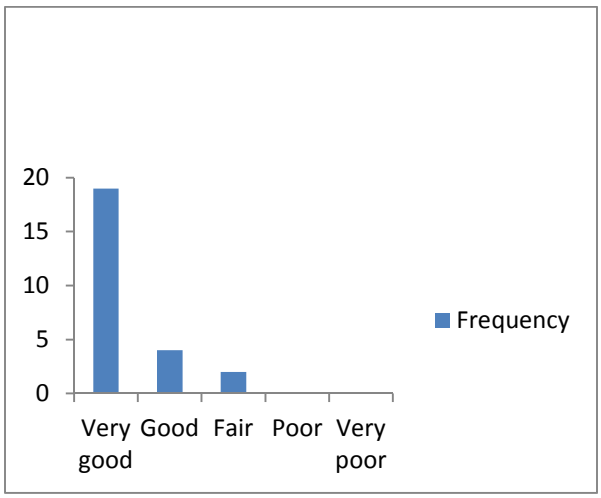

Figure 13: Company's relationship with its suppliers

Customer Service Importance in the Company

Figure 14 shows the customer service importance of the company. Twenty one (84%) of the staff said the company takes customer service very important, while four (16%) said the company see customer service has been important. Therefore, the company takes customer service very important.

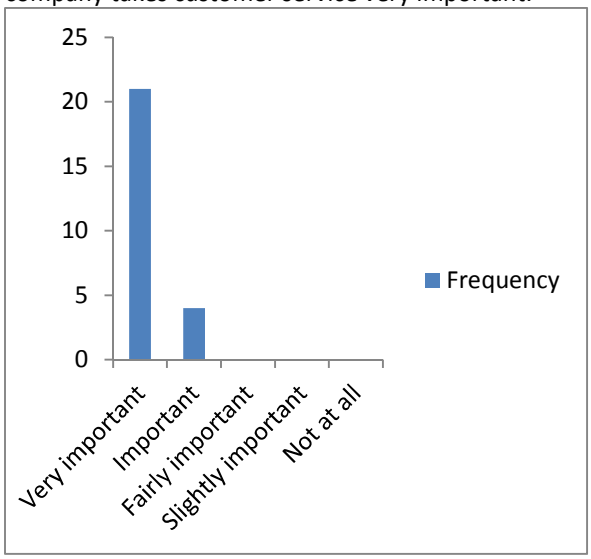

Figure 14: Customer Service Importance in the company

Optimal Service Distribution Network Will Increase Company's Income

Figure 15 shows the optimal service distribution network will increase company's income. Twenty (80%) of the staff strongly agreed that optimal service distribution network will increase the company's income, three (12%) only agree that optimal service distribution network will increase the company's income. Two (8%) of the staff couldn't decide if optimal service distribution network will increase the company's income. Therefore, optimal service distribution network will strongly increase the company's income.

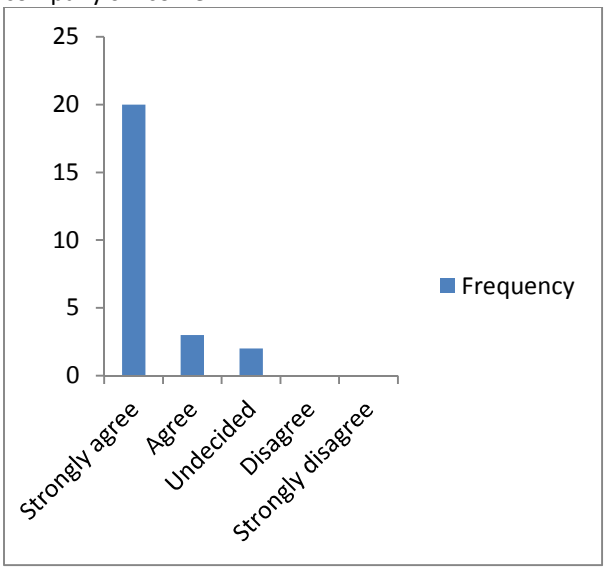

Figure 15: Optimal service distribution network will increase company's income

Regular Inventory Counts Will Reduce Cost and Amount of Money Tied Up On Inventory

Figure 16 shows the regular counts will reduce cost and amount of money tied up on inventory. Twenty two (88%) of the staff strongly agreed that regular inventory count will reduce cost and also the amount of money tied up on inventory. Three only agree that regular inventory counts will reduce cost and money tied up on inventory. Therefore, regular inventory count will strongly reduce cost and money tied up on inventory of the company.

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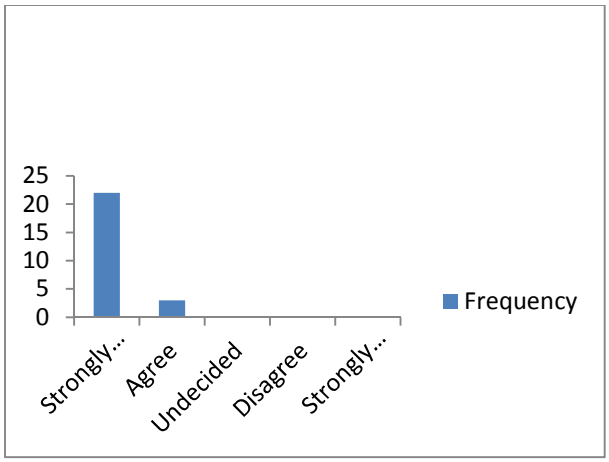

Figure 16: Regular inventory counts will reduce cost and amount of money tied up on inventory.

SUMMARY OF MAJOR FINDINGS

This study was an attempt to assess the supply chain management and its impact on the company. I have reviewed some relevant literatures that establish the fact that if supply chain is effectively managed it will reduce cost, increase the organizations' income and competitive advantage over others. The findings revealed that most of the company staff have formal education and are experienced in their line of duties.

The company produces two standardized product i.e building and interlock bricks and unstandardized product which depend on customer request. The supply chain activities in the company include purchasing, storage, production, customer service, transportation and marketing. The findings also revealed that the company forecast demand, purchasing and sales before production is carried out making their production strategy Make-to- Stock (MTS). The company's product demand follows a trend and not seasonal. Findings showed that the company has bill of material (BOM) and do material requirement planning (MRP) for its products.

The company has a distribution center which handles the receiving, sorting, organizing and distributing its product. The company source production materials themselves which is majorly cement, sand and stones. Findings also revealed that they always get feedback from customers on the value and quality of their product. The company has two inventory storage facility; one for the building bricks which takes 9000 to 1000 bricks depend on size and the other for interlock bricks which also takes 12000 to 13000 interlocks depending on size respectively.

The findings further revealed that fluctuating energy/fuel cost affects the company's income because of its reliance on a generator to power their equipment. The result also indicated that apart from insecurity which is ravaging the State (Zamfara), the company is not prone to any risk or major disaster. The result further indicated that the company sometimes gets demand which outweighs their capacity.

Majority of the staff are convinced that if the company optimize its service distribution and regularly counts its inventory to know the amount of money tied in it, cost will be cut and income will grow eventually. The result revealed that the company is aware of the importance of customer service for better service delivery.

CONCLUSION

The company's supply chain practice/strategy can be classified or characterized as a push system supply chain strategy which is in accordance with Simchi-levi *et al.,* (2008). Push system supply chain strategy are slow to react to market changes, therefore stockouts or plenty inventory are common as can be seen in the company. Push system have high manufacturing, inventory and transportation cost.

The company's production is affected by; the insecurity in the State (Zamfara) and fluctuating fuel/energy cost. These challenges reduce production outputs and increase cost, thereby reducing the company's overall profit.

The supportive activities in the company includes; customer service importance, regular inventory counts to reduce the amount of monies tied up on inventory and optimal service distribution network to increase the company's income.

REFERENCES

Baily and Farmer (1990), Purchasing Principle and Management London: Pitman Publishing. Pp 82

Gmelin, H and Seuring, S. (2014). Achieving Sustainable New Product Development by Integrating Product Life Cycle Management Capabilities. *International Journal of Production Economics.* Vol.154, Issue C, Pp. 166-177

Monezka Roberts,(2002). Purchasing and supply chain management 2nd edition. Crawfords ville. Southwest, R,.R, Donnelley and Sons Company. Pp. 82-87, 572 – 579

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Roh, J., Hong, P., & Min, H., 2014. Implementation of a responsive supply chain strategy in global complexity: The case of manufacturing firms. *International Journal of Production Economics*, 147(Part B), pp. 198-210.

Vonderembse, M. A., Uppal, M., Huang, S. H., & Dismukes, J. P. (2006), "Designing supply chains: Towards theory development", *International Journal of Production Economics*, Vol. 100 No. 2, pp. 223–238.

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