Supply Chain Management and Performance of Selected Plastics Manufacturing Firms in Anambra State

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ABSTRACT

The study investigated the type of relationship that existed between Supply Chain Management (material resource planning) and performance of selected plastic firms and specifically determined the type of relationship that existed between master production schedule and supplier scheduling as agent the service delivery of selected plastic firms in Anambra State. The study adopted Correlation Survey Research Design became the relationship existing between the variable were identified. The data was collected using structured questionnaire with five point linkert scale for the responses. Descriptive statistical troll was used to describe the data. The population of the study was 225 and sample size was 144 determined using Taro Yamane Formula. 140 copies of questionnaire were return out of 144 distributed. The hypothesis was tested with the use of Pearson’s Product Moment Correlation Coefficient. The result revealed that there was a significant positive relationship between master production schedules as well as the supplier scheduling and service delivery. The study concluded that Supply chain management as a formal computerized approach to inventory planning manufacturing schedule, supplier scheduling and overall corporate planning provided the user with information about timing (when to order) and quantity (how much to order) generate new orders and rescheduled existing orders as necessary to meet the changing requirements of customers and manufacturing. In the light of the findings, the study recommended that the firm should continuously renew their supply chain management policy to be in line with the increasing technological change and that adequate training should be provided to enhance employee skills on the usage of the technique of Material Procurement.

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1.1 Introduction

As organizations continue to seek ways to improve their overall performance, and new computer technology put industry under pressure to update and overhaul information systems. Computer applications to support manufacturing have developed rapidly in recent years. Relatively simple materials requirement planning systems were first introduced in the 1960s. Plastic firms in Awka like their counterpart in other places adopted this measure but with time as the capabilities of computer technology continued to increase more modules were added to integrate other organizational business functions into manufacturing-support computer systems. These computer systems are more commonly known as material manufacturing resource planning.

The Material Resource Planning (MRP) process has become a cornerstone of the manufacturing industry that has been around for many years. MRP has become so engrained in the manufacturing industry that one of the biggest challenges in improving customer service is the fact that not all users understand the complexity of the system. Due to this complexity, it is difficult to make changes to a process because the total impact may not be known. The success of MRP is predicated on the ability to forecast when to start manufacturing a product to ensure that the finished product becomes available to the customer on the promised date to meet the customer's expectation. It implies that for every end item, a Master Production Schedule (MPS) is credited to specify delivery times and order from a forecasted demand (Segerstedt, 2002). The forecasting is both external and internal to the organization once the customers are determined; the forecasting on efficiency, utilization, and availability of the manufacturing resources begins.

Plastic firms in Anambra State just like their peers whether in developed or less developed countries, have inadequately used this concept and are faced with the pressure of time-based competition, the spread of information and communication technologies within organizations (Candis & Cigolini 2002), the speed of delivery required by customers and increase of product diversity, while at the operational level, are suffering from high scrap, losing market share, high level of inventory and poor quality in products and labour (Salaheldin & Francis 2013).

Studies have shown that successful implementation of advanced level of MRP can help manufacturers to alleviate many of the obstructions mentioned above (Petroni, 2002). Research has shown that successful implementation of MRP can bring significant benefits to manufacturers namely: improving product quality reducing lead times, reducing overtime, scrap reduction reducing safety stock, improving productivity, better cost estimation, minimizing Work in Progress (WIP) and better production scheduling. But the literature review reveals that few efforts have been made to examine the nature of relationship between master production scheduling and on time delivery of product.
It is in the context of the above background that this present study becomes relevant and adding to this body of knowledge by examining the extent supply chain management applying material resources planning process affects the performance of plastic firms in Anambra State.

1.2 Statement of the Problem

Manufacturing firms depend heavily on their productive equipment. The productive equipment however does not produce with nothing; materials are needed to continue production. It was observed in the studied firms that materials which are very crucial to the productive capacity of the machines and the overall performance of the organization are not ordered properly. The materials are ordered based on the discretion of manager and sometimes the managers do not communicate properly with the inventory unit to know when to make new order. The organizations of study run into problems of stoppages of work as a result of little or shortages of inventory. They also do not have a master production schedule which will help them to forecast the quantity of production for weeks or months which will help them in planning for inventory a raw material acquisition. This also affects their ability to meet order placed by customers and their service delivery capacity. It also affects the overall performance of the organization because not meeting order means reduced revenue from sales which will affect their ability to meet obligations from both the banks and material suppliers. This highlighted problems necessitated this study.

1.3 Objectives of the Study

The broad objective is to determine the type of relationship that exists between Supply Chain Management applying Material Resources Planning process and performance of selected plastic firms in Anambra State. Specifically the study is designed to:

1. Determine the type of relationship that exists between master production schedule and service delivery of selected plastic firms in Anambra state
2. Determine the type of relationship that exists between supplier scheduling and service delivery of selected plastic firms in Anambra State.

1.4 Research Question

1. To what extent does supplier scheduling affect the service delivery of selected plastic firms in Anambra State.
2. To what extent does supplier scheduling affect the service delivery of selected plastic firms in Anambra State.

1.5 Research Hypothesis

H01: There is no significant relationship between master production schedule and service delivery of selected plastic firms in Anambra State

H02: There is no significant relationship between supplier scheduling and service delivery of selected plastic firms in Anambra state.

1.6 Significance of Study

For this study the managers of plastics will benefit immensely it will enable them to automate their functional areas with the aim of ensuring optimum utilization of resources in the firm to improve business performance. Researchers and owners of businesses will still find outcome of this study interesting since it opens a new world of knowledge on how to manage resource efficiently to ensure optimum business performance.

1.7 Scope of the Study

This study is delimited to examining extent to which material resources planning affect the performance of selected plastic firms in Anambra State.

The organizations studied are plastic packaging industries limited. Ezenwa plastics limited, Reliable steel and plastics limited and Millennium industries limit

1.8 Limitations of the Study

The study faced limitation due to the unyielding attitude of the respondents in answering the research question but was overcome by revisiting them and convincing them on the need of the study.

2.1 Review of Related Literature

Material Resources Planning is a formal computerized approach to inventory planning, manufacturing scheduling, supplier scheduling and overall corporate planning (Wikipedia). IT provides the user with information about timing (when to order) and quantity (how much to order) generates new orders and reschedules existing orders as necessary to meet the changing requirements of customers and manufacturing. The system is driven by change and constantly recalculates material requirements based on actual forecast orders. It makes adjustments for possible problems prior to their occurrence, as opposed to traditional control systems which looked at more historical demand and reacted to existing problems.

Arnold (2000) posits that most manufacturing businesses, the bulk of the raw material and in-progress inventories are subject to dependent demand. Generally, independent demand items are carried in finished goods inventory and subject to uncertainty end customers demand. The author posit that by the use of computer, material requirements planning is able to manipulate massive amounts of data to keep schedules up to date and priorities in order. The technological advances in computing cost make computerized manufacturing planning and control systems such as material requirements planning powerful tools in operating modern manufacturing systems. Volman (1992) states that the major objective of an material resources planning system are to simultaneously; ensure the availability of materials, components and products for planned production and for customer deli very; maintain the lowest possible level of inventory: plan manufacturing activities delivery schedules and purchasing activities He posit that the three major inputs 01’ an MRP system are the master production schedule, the product structure records and the inventory status records that without these basic inputs the MRP system cannot function. Kwahng (2014) asserts that Material Resources Planning (MRP) process has become a cornerstone of the manufacturing industry that has been around for many years. Over the decades, it has been refined and furthermore with the development of the computer, it has become a robust and complicated tool used in many of the manufacturing industries. Enterprise Resource Planning (ERP) systems are core software programs used by companies to integrate and coordinate information in every area of the business, it help organizations manage companywide business processes, using a common database and share management reporting tools.

Bushton, Ph& Baker (2011) defines material resources planning as standard system for calculating the quantities of components, sub-assemblies and materials required to carry out a production programme for complex product. The MRP process starts with a production programme which schedules the products to be completed week by week during the planning period. It is based on customer orders, scales forecasts and manufacturing policy Farrington &Lysons, (2006) they asserts further that material requirements planning systems help manufacturers determine precisely when and how material to purchase and process based upon a
time-phased analysis of sales orders, production orders, current inventory and forecasts. They ensure that firms will always have sufficient inventory to meet production demands, but not more than necessary at any given time.

Bankanjo (2002) Material Requirement Planning (MRP) specifically define the requirements of dependent requirements of materials only base on forecast/projection/safety stock. Kanban/pull system or schedule/planned production base on historical data-push system or is the process of identifying and procuring the materials needed to make products. Manufacturing Resources Planning (MRP-**~** on the other hand include all aspect of resources that would impact the overall manufacturing planning process which include: machinery, labour, set up, raw material etc. while Enterprise Resource Planning (ERP) is a software plat form that helps business owners determine how to best use their available resources. The systems are used to integrate management of information both external and external across the entire organization. It allows a company to collect and use data from various aspects of operations. Using this software is a tremendous help in organization, as integrating data allows for information to be shared in such a way that reduces errors and increases productivity and increase workforce productivity, reduce administrative costs or expand your operations.

2.1.2 Master Production Schedule

Beasley (2012) Master Production Schedule also commonly referred to as the MPS is effectively the plan that the company developed for production, staffing, inventory etc. It has as input a variety of data, e.g. Forecast demand, Production costs, Inventory cost, etc. and as output production plan detailing amounts to be produced, staffing levels etc. For each of a number of time periods it can equally be seen as a manufacturing planning tool that is used to capture a number of variables from different elements of the organization (customer demand capacity, inventory levels, material flows, etc.) and then describe which parts the organization will manufacture and at what frequency.

Harynana (2013) defines master production schedule as a very distinct and important linkage between the planning processes. With the help of this schedule one can know the requirements for the individual and items by date and quantity. In companies, MPS are generally produced in order to know the number of each product that is to be made over some planning horizon. This schedule forms a very unique part of the company’s sales program which deals with the planned response to the demands of the market.

A master production schedule according to the author is also in management language referred to as the master of all the schedules as this schedule provides the production planning, purchasing, top management the most needed information required for planning and control of the whole manufacturing process or the operation. It plays an important role in balancing demand with the supply of satisfying customers according to the limits of the factory and supplier base.

The schedule gives production, planning, purchasing and top management the information needed to plan and control the manufacturing operation. IT derives detailed material and production requirements in the material resource planning module.

2.1.2.1 Material

Rumelt (2002) classified materials for use in manufacture under three heads; raw materials primarily from agriculture and various extractive industries e.g. mineral resources, fruits and vegetables sold to processor; semi-finished goods and processed materials to which wires, paper, chemicals etc. and component parts and assemblies that are completely finished products of one manufacture, which can be used as part of more complex product by another manufactures. The planning for these materials are referred to as material resources planning aided with the use of computer/software.

According to Business Dictionary materials management is the planning and control of the functions supporting the complete cycle (flow) of materials and the associated flow of information. These functions include; identification, scheduling, procurement, inspection, quality control packaging, storage, inventory control, distribution and disposal. Also called materials planning.

2.1.3 Performance

The concept of performance lends itself to an almost infinite variety of definitions, many of which relate to specific contexts or functional perspectives. Anthony (1965) gave a general definition and well-crafted definition of performance, sharing the concept of two primary components, efficiency and effectiveness. Many previous definitions of performance tended to focus on the size of efficiency, showing financial results as a primary measure of performance. Subsequently, this concepts definitions have evolved, especially with the emergence of the balanced scorecard (Kaplan, Norton 1992) which include not only the financial perspective, but also the internal perspective, customers perspectives and innovation and learning perspective. Performance can be expressed through a balance set of parameters describing the results and processes to achieve these results. Business performance is achieved by balancing and interrelation of at least four forces (Kaplan, Norton 2001).

- Efficiency of production process
- Shareholders meeting requirement
- Customer satisfaction
- Capacity of the growth and development staff skills (training, satisfaction), the degree of innovation use of opportunities

Performance is the execution or accomplishment of work, tasks or goals to a certain level of desired satisfaction. In this study, however organizational performance is defined in terms of the ability of an organization to satisfy the desired expectations of three main stakeholders comprising of owners, employees customers (Aluko 2003).

2.1.4 Service Delivery

Service delivery is the efficiency and effectiveness of services delivered to customer and how the customers view such services as being in line with their expectations. Service delivery could be measured in several ways, it could be how timely the services were provided, the quality of the service delivered or the cost implication of the service provided. Service delivery could be a great measure of how organizations perform because the continuous existence of an organization in a competitive environment hinges on how customers view their service and products. Karls (2009) posit that service delivery could be seen as how fast service is provided (on-time delivery). He posit that on-time delivery is a measure of process and supply chain efficiency which measure the amount of efficiency of finished goods or services delivered to customers on time and in full. It helps determine how efficiently an organization meets up to customer needs or agreed deadlines. If the figure is too low or below the benchmark it could be used as a signal that somewhere along the supply chain there are bottlenecks,
inefficient or time consuming processes which are not adding value and warrant further investigation or a slower delivery method is being employed. It is being calculated as the amount of units or shipments delivered on time versus total orders shipped.

2.2 Theoretical Framework

This study is anchored on Keith Oliver (1982) theory of supply chain management. According to the theory, supply chain encompasses the planning and management of all activities involved in sourcing, procurement, conversion and logistics management. This theory gained prominence in mid 1990s when a fury of articles and books came out on the subject. In the 90s, it rose to prominence as a management buzzword and operations managers begin to use it in their title with increasing regularities. Expatiating, Hines (2004) asserts further that supply chain require a total system view of the linkages in the chain that works together efficiently to create customer satisfaction at the end of delivery to the customer. As a consequence, cost must be lowered through the chain by drawing out unnecessary cost and focusing attention on adding value.

Supply chain management spans all movement and storage of raw materials work in progress inventory and finished goods from the part of origin to the point of consumption. This theory was adopted for this work because it talks about how to effectively coordinate activity through the various chains in the organization so as not to run short of materials which will aid in improving the service delivery of the organization.

2.3 Empirical Review

Studies on Material Resources Planning and performance reviewed are shown below with their finding from different perspective.

Liu, Miao & Li (2014) examined the impacts of Material Resource Planning systems on firm performance in chemical firms in Chinese. The study specifically examines the impacts of MRP implementation on firm performance using the financial data from 50 Chinese chemical firms that implemented ERP. The results find no significant performance improvement during the implementation period and the three-year post-implementation period and a decline in performance in the first two year after implementation. However, the study revealed that a slight performance improvement in the third year after implementation may indicate that the financial benefits of MRP may show after a long term MRP use.

Njihia&Mwirigi (2014) carried out a study on the effects of Enterprise Resource Planning systems on firms performance: A survey of Commercial Banks in Kenya. The study discussed the issues of introducing ERPs into small and medium enterprises with the aim of finding the best ways to manage the change processes to get a competitive advantage over its rivals. The study had five objectives of finding out how the financial resource availability, organizational complexities employees perceptions, regulatory requirements and having a top management support affects the effective implementation of ERP system which in turn will affect the firms performance. The research adopted a descriptive design employing the use of mainly questionnaires as the primary data collection tool. Data was collected using questionnaires and analyzed by finding out the mean, maximum, minimum, standard deviation and the correlation between the variables in the findings. The hypothesis test was done by chi-square test of independence. The study found that financial resource availability, organizational complexities, employee's perceptions, regulatory requirements and having a top management support all affects the effective implementation of an ERP system which in turn will affect the firm's performance.

Brutus &Chiyern (2015) examined the assessment of materials management and profitability of an organization. The study aims at finding out how an organization can take the problems identified and how effective material management can increase the profitability of an organization. The study revealed that material management used by the company, adequate storage facilities prevents interruption on production process among other things. As a result of the above it was recommended that there should be good record system of materials for the operations of the organization as it affects production and the training of staff to acquire new skills and knowledge needed for the work for the benefit of the organization.

Nwosu (2016) examined the impact of materials management on the profitability of Nigeria brewing firms. Especially the study examined whether there is effective and efficient materials management in Nigeria brewing firms and the extent to which it has contributed to the profitability. r he population of this study is 4648 being the total staff strength of Nigeria Breweries and Guinness Nigeria PLCs and a sample size of 368 was selected. Materials inventory, materials procurement, material storage and interdepartmental collaboration were adopted as sub variables of materials management while profit before tax, return on equity, earnings per share tax paid and dividend paid was used as profit indicators to ascertain the profitability of organizations under study Questionnaire and oral interviews were major instrument used in data collection and simple percentages were used in analyzing the data collected from the questionnaire. Four hypotheses were formulated. 2 statistic was applied for test of hypotheses and the following finding were made: that all the variable studied have significant effect on the profitability of brewing firms. The study concludes that effective materials management is indispensable to brewing firms in making profits. However, the study recommended that all manufacturing firms should embrace effective and efficient materials management in order to remain profitable.

Adeyemi (2010) carried out a study to determine whether inventory management is a tool of optimizing resources in manufacturing industry; using Coca-Cola Bottling Company, Ilorin plant as a study area. The tools used in analysis of the data collected were variance analysis. Economic order quantity model and the chi-square method. The result confirms that there is significant positive relationship between inventory management and survival of manufacturing organization.

Unam (2012) carried out a study on materials management for Business success, the case of the Nigerian Bottling company PLC Data was collected through a structured questionnaire, supported by interview. Using chi-square (X2) test of independence the results provided evidence of a positive significant relationship between efficient materials, and firms success. The implication of this is that through efficient management of material a manufacturing firm can achieve significant cost saving improvement in production efficiency and increase in profitability. The study showed that for manufacturing industries to experience remarkable success in their performance, priority must be given to materials management as a tool concept.
2.4 Summary of Reviewed Literature

Studies reviewed on the concept of material resources planning revealed that Material Resources Planning (MRP) is a formal computerized approach to inventory planning, manufacturing, scheduling, supplier scheduling and overall corporate planning. W. Arnold (2000), Volman (1992) & Kwahng (2014) etc. Theory used in the study is Keith Oliver’s (1982) theory of supply chain management that encompasses the planning and management of all activities involved in sourcing, procurement, conversion and logistics management.

The empirical studies reviewed showed that there is significant relationship between material resources planning, enterprise resources planning, manufacturing resources planning, inventory control and different dimensions of firms performance. Few studies examined the extent to which material resources planning (master production schedule) affects firms performance in plastic firms. It is this gap in knowledge that this study seeks to fill in order to contribute to this vast body of knowledge unlike other researcher.

Methods

3.1 Research Design

The study adopted Correlation Survey Research Design because the relationship existing between the variables were identified. The interactions between the variables are given below:

\[
\text{PER} = (\text{MRP})
\]

Where:

\[
\text{PER} = \text{Performance}
\]

\[
\text{SD} = \text{Service Delivery}
\]

\[
\text{MRP} = \text{Material Resource Planning}
\]

\[
\text{MPS} = \text{Master Production Schedule}
\]

3.2 Population of the Study

The population of this study is made up of four plastics manufacturing companies located in Anambra State Nigeria. The total population of the study was 225 selected from plastic packaging industries limited, Ezenwa plastics limited, Reliable steel and plastics limited and Millennium industries limited.

3.3 Sample Size and Sampling Techniques

The population of the study is 225 using Taro Yamane formula the population was reduced to 144 for easy analysis. Simple random sampling was used as the sampling technique.

\[
N = \frac{N}{1 + \left(\frac{N_e}{N}\right)^2}
\]

Where:

\[
N = \text{Population Size (225)}
\]

\[
E = \text{error limit (0.05)}
\]

\[
N = \frac{225}{1 + 225(0.05)^2} = 144
\]

Method of Data Collection

Data was collected using structured questionnaire. A five point Likert Scale questionnaire that ranged from Strongly Agree (5), Agree (4), Strongly Disagree (3), Disagree (2), and Undecided (1).

Validity of the Instrument

The study adopted face and content validity which means that the objective of the study runs in line with hypothesis, research question and literature review. The face and content validity of the instrument was carried out by giving out copies of the questionnaires to validators and experts in research in the Department of Business Administration and Educational Foundation.

They reviewed the content coverage, relevance and effectiveness in measuring the problem under study and also reviewed the appropriateness of the language expressions and instructions to the respondents.

Reliability of the Instrument

Test Retest was used to ascertain the level of consistency of the instrument. The researchers administered 50 copies of the instrument on 50 employees of Ezenwa plastic firm in Onitsha. After a time- Tame of 14 days, the instrument was re-administered on the same respondents and collected. The data from the two tests were analyzed using correlation analysis and a figure of 0.75 was obtained which shows that the instrument is reliable as shown below

\[
\text{Table 3.1. The reliability test table.}
\]

<table>
<thead>
<tr>
<th>S/N</th>
<th>Pretest Response</th>
<th>Post-test Response</th>
<th>d1</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>49</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>49</td>
<td>46</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>50</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>49</td>
<td>47</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td>47</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>49</td>
<td>47</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>48</td>
<td>47</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
<td>48</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>49</td>
<td>48</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>47</td>
<td>49</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source:

\[
r = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}
\]

\[
r = 1 - \frac{6 \times 41}{10(10^2 - 1)}
\]

\[
r = 1-0.25
\]

\[
r = 0.75
\]

Therefore, with a reliability coefficient value of 0.75 the instrument is deemed reliable

3.7 Method or Data Analysis

Descriptive statistical tool was used to describe the data collected with the aid of questionnaire. Pearson Product Moment Correlation Coefficient was employed to test the

Table 4.2. Descriptive statistics for research questions.

<table>
<thead>
<tr>
<th>Description Statistics</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have a list of items remaining in our warehouse</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.46</td>
<td>1.642</td>
</tr>
<tr>
<td>We schedule our production according to demand</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.94</td>
<td>1.485</td>
</tr>
<tr>
<td>We have list of to produce over certain periods</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>2.86</td>
<td>1.632</td>
</tr>
<tr>
<td>I am not asked about the quantity of raw materials remaining</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.40</td>
<td>1.443</td>
</tr>
<tr>
<td>We always run short of materials</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.48</td>
<td>1.500</td>
</tr>
<tr>
<td>We will meet schedules if we plan our productions well</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.53</td>
<td>1.476</td>
</tr>
<tr>
<td>Customers are always not happy if they are disappointed</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.71</td>
<td>1.442</td>
</tr>
<tr>
<td>We provide quality service to our customers</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>2.93</td>
<td>1.716</td>
</tr>
<tr>
<td>Customers complain about not supplying goods on time</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.46</td>
<td>1.642</td>
</tr>
<tr>
<td>We find it difficult to retain customers for a long time</td>
<td>140</td>
<td>1.00</td>
<td>5.00</td>
<td>3.37</td>
<td>1.706</td>
</tr>
<tr>
<td>Valid N (Listwise)</td>
<td>140</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SPSS Ver. 22
hypothesis at an alpha level 0.01 with the use of SPSS version 22.

Data Presentation and Analysis

Table 4.1. Schedule of Questionnaire Administered and Returned.

<table>
<thead>
<tr>
<th>Number of Questionnaire administered</th>
<th>Number of Questionnaire retrieved</th>
<th>Number of Questionnaire not retrieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>144</td>
<td>140</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Research Questions

What is the type of relationship existing between master production schedule, supplier scheduling and service delivery in selected plastic firms in Anambra state.

Decision rule for the mean if to accept all mean figure of 3. And above and reject any that is below 3. From the above data presented, all but questionnaire item 3 and 8 are accepted as being entrenched in the organization.

Table 4.3. Correlation.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Master Production Schedule</th>
<th>Service delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Production Schedule</td>
<td>Pearson Correlation Sig. (2-tailed) N</td>
<td>140</td>
</tr>
<tr>
<td>Service delivery</td>
<td>Pearson Correlation Sig. (2-tailed) N</td>
<td>140</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Table 4.4. Correlation.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Supplier Scheduling</th>
<th>Service delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Scheduling</td>
<td>Pearson Correlation Sig. (2-tailed) N</td>
<td>140</td>
</tr>
<tr>
<td>Service delivery</td>
<td>Pearson Correlation Sig. (2-tailed) N</td>
<td>140</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

5.1 Summary of Findings

The correlation was computed using Pearson Product Moment Correlation Coefficient to determine the relationship that exists between Master Production Schedule and Service Delivery. Table 4.3 and Supplier Scheduling Table 4.4 above showed that the correlation coefficient was 968 (positive), and since the p-value (0.000) is less than 0.01 (2-tailed) level of significant, the alternative hypothesis is accepted and reject the null hypothesis. There is a strong positive relationship existing between master production schedule and service delivery.

5.2 Discussion of Findings

The outcome of the analysis shows a positive relationship between master production schedule and service delivery, as well as the supplier scheduling. This goes to show that as there is increase in the usage of master production schedule in the studied firms, there will also be an increase in the service delivery capabilities of the studied firms. The findings is in line with that of Unam (2012) who studied materials management for business success, the case of the Nigerian Bottling company PIC and the results provided evidence of a positive significant relationship between efficient materials, and firms success. Al: 0, Brutus and Chiyern (2015) that examined the assessment of materials management and profitability of an organization revealed that material management used by the company and adequate storage facilities prevents interruption on production process. Similarly, Nwosu (2016) who examined the impact of materials management on the profitability of Nigeria brewing firms concluded that effective materials management is indispensable to brewing firms in making profits.

5.3 Conclusion

The study concludes that Material Resources Planning as a formal computerized approach to inventory planning, manufacturing scheduling, supplier scheduling and overall corporate planning provides the user with information about timing (when to order) and quantity (how much to order) generates new orders and reschedules existing orders as necessary to meet the changing requirements of customers and manufacturing. The system is driven by change and constantly recalculates material requirements based on actual forecast orders. It makes adjustments for possible problems prior to their occurrence, as opposed to traditional control systems which looked at more historical demand and reacted to existing problems.

5.4 Recommendations

In the light of the findings, the study recommended the following:

1. That the focused firms should continuously renew their material resources planning policy to be in line with the increasing technological change.
2. That adequate training should be provided to the employees to enhance employee skills on the concept.
3. Management of the focused firms should empower their employees to come with ideas that will improve material handling capacities in order to boost production and service delivery.
4. Finally, the organizations of focus should see delivering of services as a key performance indicators as satisfied employees is a sure way of remaining in business for a long time.

References


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