Assessment of Inventory Control Practices in Nigeria Industries

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Abstract: Nigerian industries were grouped into three categories-small-, medium- and large-scale to determine their response to the practice of quality control systems. Area of inventory examined includes manpower, raw material and finished goods. Other inventory inbuilt factors such as order time, lot size, cost of order, number of order, demand and production rate were also assessed. The evaluation of data collected from industries for the aforementioned factors was done using simple statistics based on average response out of total responses. The results of the study showed that the size of industry, small-, medium- and large-scale, has a significant effect on both the size of staff and the level of involvement in inventory management of both the raw material and the finished product.

Key words: Inventory management, Nigerian industries, raw material, production, survey

INTRODUCTION

It is essential for the organization to hold adequate stocks to minimize cost and at the same time wins customers' satisfaction. Materials contribute a major recurring investment and modern management has recognized that a constant review of inventory can reduce this capital tied up without hampering the cost and customers goodwill. The type of inventory system to be practiced in any organization depending on many factors among which are economy stability of the place, infrastructural facilities available, transportation network and many more which are called constraints. Inventory planning means the determination of the type and quantity of inventory items that would be needed at future point for maintaining the production schedules (Buffa, 1972; Ford, 1995).

Serious effort has been made to review various definitions as regard inventory system control. For example, John (1979) defined inventory control as quantitative and monetary values of items at predetermined level low within stated limit, while Levis (1976) and George (1985) defined it as a scientific act of controlling the amount of stock level held in various firms within a business to meet economically the intervals and external demand priced upon that business.

However, many efforts at improving inventory management of the organization are evident in literature. Some of these efforts optimized inventory management using dynamic programming (Clark and Scarf, 1960) and integer programming (Goyal, 1974). Many concepts have been introduced into the existing inventory models such

as systems or "can-order" system (ScS) (Balintfy, 1964), larger problems Lipscitz optimization (Wildenann et al., 1997). Improvement on the work of Balintfy (1964) has been done by Silver (1974) and Ignall (1969) to make the inventory results more reliable and accurate. Periodic replenishment models proposed by Goyal (1974) allow all items or specific subsets of items to be ordered in every replenishment opportunity but not beyond a base stock level. Many of these works in literature cannot fit in term of application in Industries, especially in developing country because of the gigantic and complex nature of the model developed. Besides many industries in developing countries are likely unaware of global development in inventory management. Therefore, the first stage in inventory research especially in the developing countries is to assess the level of awareness and involvement in inventory managements in such regions. This will serve as indicator of how, when and where to start implementing inventory models so far developed in literature concerning single and multiple items (Akanbi et al., 2001), cost economy (Chikan et al., 2004; Ghali, 2004), items demand and supply forecast (Zotteri et al., 2004) and deterministic and stochastic systems (Taha, 2002) inventory problems.

In this study, participatory level of Nigerian industries in inventory management is assessed to determine how far they are from implementing the various inventory control models developed in literature.

MATERIALS AND METHODS

Date on inventory management systems were collected using questionnaire and oral interview of the

management of selected industries in Ondo and Lagos States of Nigeria. The companies were selected based on factors such as workers population, type of industries and location of industries. Based on stated criteria, 12 industries were successfully selected and among them (in coded form) are WE Limited, AT Industry, BI Limited, TI limited, DN limited, ON Industry (all in Akure, Ondo state) and DWA limited and CM Limited (in Lagos.). The names of industries are concealed to safeguard their integrity and information. The required information is available the selected industries and their inventory information are well document as well as other operational details. In these industries the following inventory management related questions were asked:

- Organization status: (public or private).
- Type of industries (small, medium-large scale).
- Labour force.
- Inventory system/management (practiced or not).
- Type of inventory systems practiced.
- Supply of raw materials (tons).
- Order of raw materials (practice or cost).
- How often the order is placed.
- Cost of placing an order.
- Problems often encountered while placing an order (transportation, political and security).
- Problems often encountered while receiving an order.
- Demand rate of finished product.
- Production rate of finished product.

The responses to various options of the above inventory related problems are analysed statistically using simple average. The frequency and its respective percentages for each option considered were calculated and the values obtained though the calculations are illustrated in histograms.
The statistics used is:
Percentage Response (PR%) = (Number of response/Total expected response)×100

RESULTS AND DISCUSSION

The results obtained for organisation status, industry type, labour force, inventory system and type, raw material supply, raw material quantity order, how often order is placed and its associated costs, ordering and receiving problems as well as demand and supply rates of finished goods are presented in Fig. 1-13. Figure 1 shows that most of the industries in Nigeria are owned, managed and controlled by private individuals. The capital for running these industries is provided by private and corporate individuals of the society. The high percentage
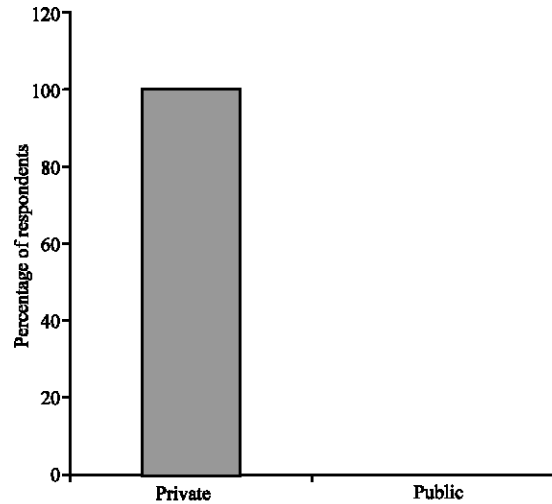

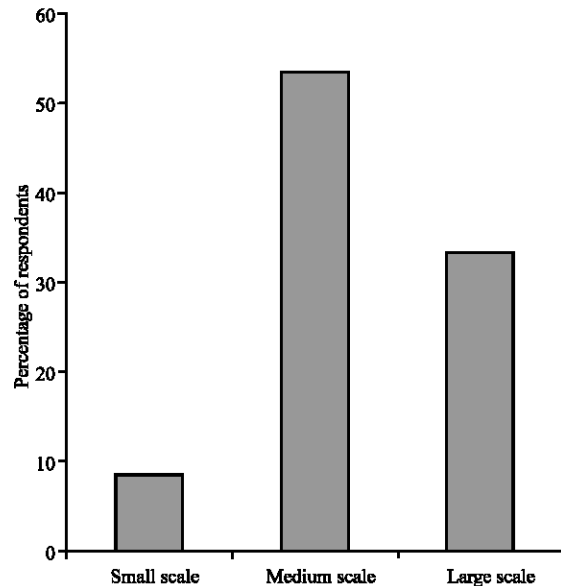Fig. 1: Chart for organization status

Fig. 2: Chart for type of industry

of private organization status in Nigeria is a sign that in the nearest future Nigeria will no longer practice mixed economy system of government but capitalist system of government.

Surveys during the conduction of questionnaires show various results as regard the type of industries available in Nigeria. It was discovered that just about 8.33% of Nigerian industries are small scale. There are so many medium scale industries in Nigeria that are privately owned while about 33.33% of the industries visited were large scale. The percentage frequency of medium scale industry in Nigeria is 50% and the advantage of this is that it will greatly increase
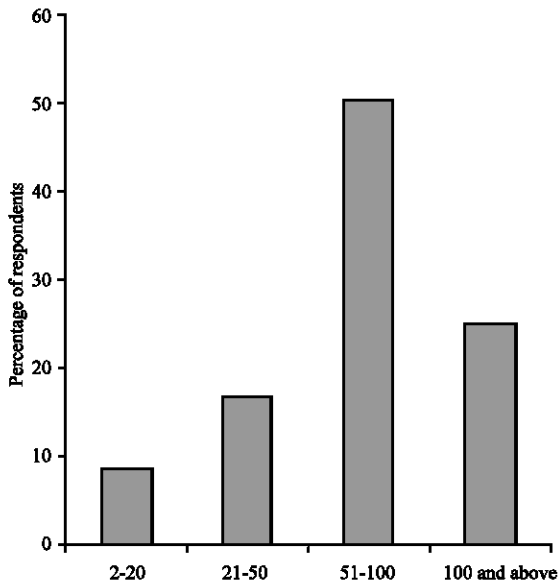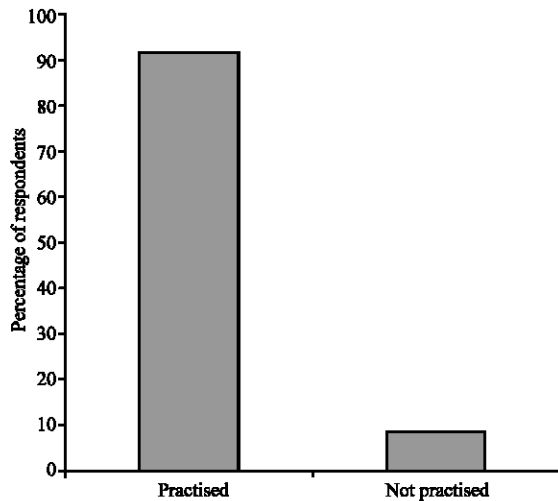
Fig. 3: Chart for labour force
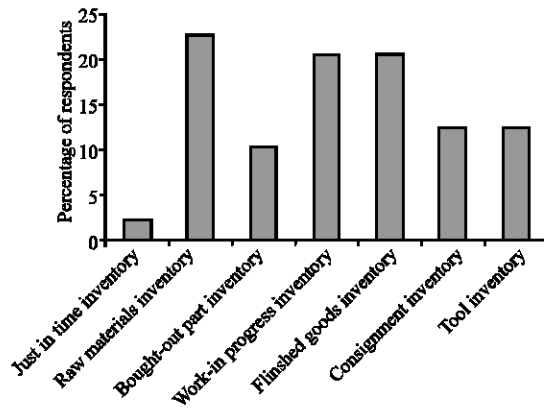

Fig. 4: Chart for inventory system

Fig. 5: Chart for type of inventory system

Fig. 6: Chart for suppliers of raw materials
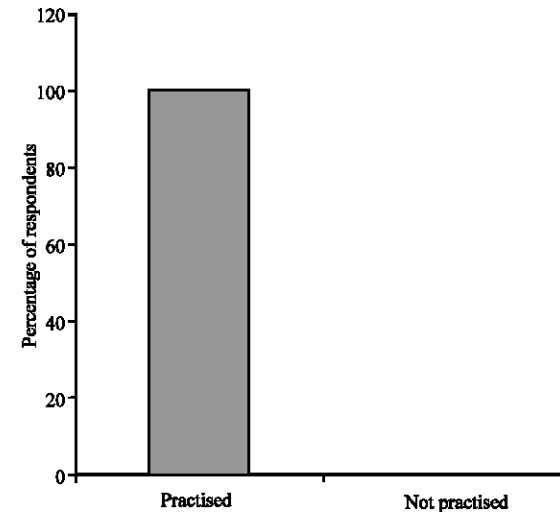
Fig. 7: Chart for order of raw material

manpower and economy of Nigeria through employment generation for Nigerian indigenes (Fig. 2).

Figure 3 shows that 50% of Nigerian industries are having 51-100 staff both skilled and unskilled labour as the total number of workers contributing to manpower development of the industries. This is quiet impressive. Only 25 % of the industries also are having over 100 staff. Likewise 8.33% of the industries are having number of workers ranging between 2-20. This is attributed to small scale nature of industries. There are many reasons for keeping inventory system. Among these reasons are: To guarantee the availability of products for sales, to protect against variation in demand and supply of

Fig. 8: Chart for how often order for raw materials
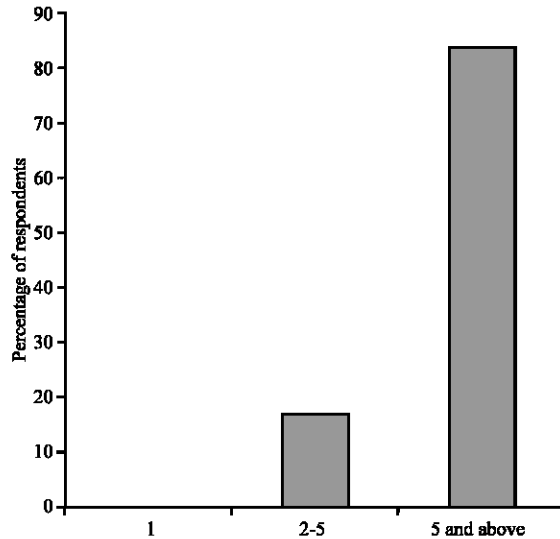

Fig. 9: Costs associated with placing an order

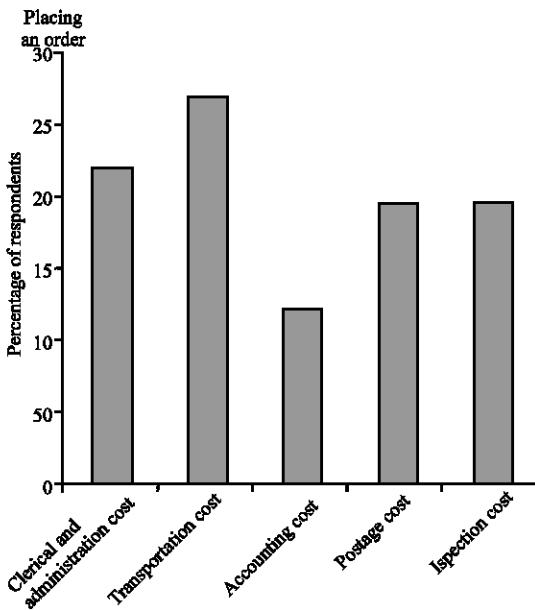

Fig. 10: Problem encounter while placing an order
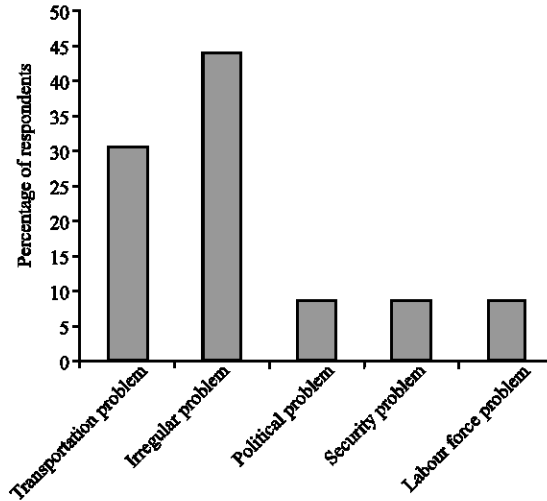
Fig. 11: Problem encounter why receiving an order

products and to hedge against inflation. Larger percentage of Nigerian industries keep inventory of their goods and this will greatly improve the goods and services rendering by these industries. Surveys showed that 91.6% of Nigerian industries practiced inventory system while just 8.33% of the industries are yet to know the advantages attributed to keeping inventory system (Fig. 4).

The results show that raw materials inventory is very important to keep in industries (Fig. 5). In-fact, the percentage frequency of the raw materials in the Fig. 6 is
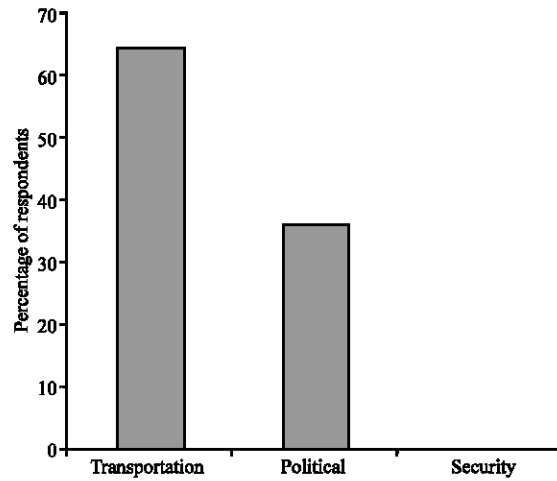
very high because of its importance. This shows that basic non-fabricated materials which have not undergone any operation since they were received from suppliers have to be kept in record so that the work flows into and out of any industries can be monitored and be determined easily. It is a known fact from this study, that just- in- time inventory system cannot be practiced in Nigerian industries. Only 2.04% of Nigerian industries put this into practice. The low percentage of just-in-time inventory system in Nigerian industries can be traced to some factors such as irregular lead-time from suppliers and transportation or road network problem.

About 83.33% of the industries visited have more than 5 suppliers of raw materials (Fig. 6). By doing this, there will be competitions among the suppliers and none of them will be willing to render poor service since there
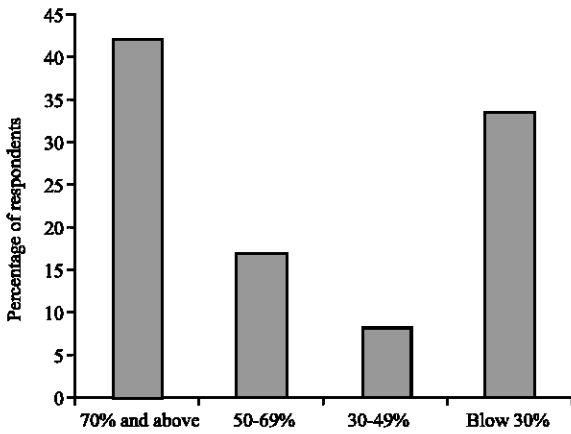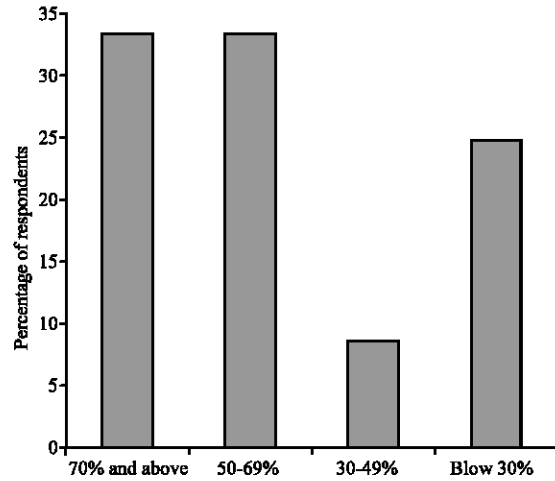
Fig. 12: Chart for demand rate

Fig. 13: Chart for production rate

are others who can render excellent service to the concerned industries. This will greatly increase the productivity of the industries. By having more than five suppliers of the same raw materials is a good method of assessing the quality of services rendered by each supplier. About 16.67% of industries in Nigeria have just 2-5 suppliers of raw materials but, it will be better to have at least more than 5 suppliers of raw materials so that industries can easily assess quality of service rendering by each of suppliers (Fig. 7). Most of the industries in Nigeria are making order for raw materials from suppliers who are diligent in their service and faithful to them in supplying whatever they ask for. This is very good (Fig. 8). There are many costs associated with placing and receiving an order. For the sake of this study, clerical and administration cost, transportation cost, postage cost, accounting cost and inspection cost were considered. Among these costs, Fig. 9 shows that 26.83% of Nigerian industries give room for transportation cost while placing and receiving order. For clerical and administration cost, 21.95% of the industries in Nigeria considered this while placing and receiving order and for both inspection and postage cost, these costs affect 19.51% of the industries.

There are some problems attached to placing an order. Some of these problems are transportation problem, political problem, security problem and many more. But, in Nigerian industries, transportation problem is the most problematic while placing an order and it affects about 64.29% of Nigerian industries. This is due to poor transportation system, poor road network system, unavailability of enough and affordable vehicle parts. This is a global problem and it must be greatly dealt with. Fig. 10 shows that political problem is another vital problem encountered by Nigerian industries while placing an order. It is a joyful thing that there is high levels of security in Nigerian industries as no industries

encountering security problem while placing an order. We must ensure that other problems are brought to minimal just as security problem as regard placing an order in Nigerian industries so that economies can progress in Nigeria.

The frequency of order in Nigeria industries from Fig. 11 shows that orders are affected by irregular lead time as to a percentage of 43.48. Lead-time is the period between the time an order is placed and the time the order is received. Inconsistent lead time causes increased in price of products and can equally causes demand rate to be increased. Another problem affecting receiving an order is transportation problem. This can be overcome by ensuring that our roads are good both in urban and rural areas.

We must also ensure that vehicle spare parts are available at affordable prices. Under normal condition, the margin between demand rate and production rate should not be too large. If possible, demand rate should be equal to production rate. About 41.67% of Nigerian industries are performing well when it comes to checking the demand rate of their product while 16.67% of industries in Nigeria are their products being demanded averagely by customers (Fig. 12). About one third (33.33%) of industries in Nigeria have their products poorly demanded by customers. The reason for this low demand rate is not known.

Production rate was one of the options that are considered in the questionnaires considered. About 33.33% of Nigerian industries are producing above 70% of their production capacity. This is an excellent performance. Also, the histogram for production rate shows that 33.33% of industries in Nigeria are producing averagely which is between 50-69% while about 25% of industries are producing below 30%. This

poor performance in industries is as of factors like low working capital, irregular lead-time, political problem and more others (Fig. 13).

CONCLUSION

Most of the industries in Nigeria are medium scaled privatized industries which employed more than 100 labours both skilled and unskilled labours. This contributes to economy and manpower development of the country. Most of these industries engaged in raw materials inventory system with more than 5 suppliers of raw materials which improved the quality of their goods and services. There is high level of security in Nigerian industries as no industries encountering security problem while placing an order. We must ensure that other problems like transportation problem, irregular lead time, political problem are brought to minimal just as security problem as regard placing an order in Nigerian industries so that there can be economy development in Nigeria. It can be concluded that Nigeria industries are ripe enough to be implementing various inventory management models developed in literature.

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