What Difference Does Inventory Control Make In Typical Small – Scale Farms’ Profitability?

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Abstract:
An analysis was made from results of five purposively selected unlisted livestock farms in Ibadan, South-west, Nigeria to examine the relationship between inventory control (IC) and profitability (an important aspect of performance). Its impact on profitability was also examined. Profitability was found to be positively and very strongly ($r = 0.82$) related to inventory control. Also, IC impacted well on profitability ($r^2 = 0.67$ or 67% and $t = 2.49$), having accounted for the upward of 67% of the income in profitability.

Keywords: Inventory Control, Profitability, Small – Scale Industries, Correlation Co-efficient, Co-efficient of Determination.

INTRODUCTION

In any organization, inventory is the stock of an item or resource. It could be in the form of raw material, in-process (semi-finished) good or finished good (Wild, 2008). Inventory could be obsolete, worn out, old, shop-worn, of the wrong size(s), colour (s) or may be imbalance among different product lines. Any of these, could reduce customer/customers’ appeal, output/sales volumes and revenue (Tersne, 1994; Wild, 2007; Bronack, 2012). Impliedly, profitability in particular and other aspects of performance, generally, could be impacted upon.

Valuation of Inventory is usually states at original cost, market value or current replacement costs, whichever is lowest. This obtains in most practices because it minimizes the possibility of overstating assets. The attendant inventory costs are holding (or carrying) costs, set-up (or production change) costs, ordering costs, shortage costs or stock-out costs. Inventory control could be seen as materials procurement, care and disposition (Nakmis, 2009; Ritzman and Krojewski, 2006).

Objectives and Significance of the Study

The general objectives of the study is to examine the difference made by Inventory Control System (ICS) through examining the relationship between

Typically, inventory control represents about 45% to 90% of all expenses for business. It is needed to ensure that any organization has the right goods in place to avoid stock-out, prevent shrinkage, spoilage, theft and to provide proper accounting (Counselors to America’s Small Business, 1984). An important discipline in all organizations no matter the size and type. Furthermore, it takes advantage of economic purchase order size. Its application is in taking stock, so as to know the available and require resources, ‘when and how to order’, ‘when and how many to deliver’ are all observed and changes noted (Zipkim, 2000). Thus, inventory control system maintains independence of operations, meets variations in product demand, allows flexibility in production scheduling, provides a safeguard for variations in raw material delivery time and finished goods delivery to customers (meeting delivery dates). Summarily, all organisations always pay good attention to the management of inventory in its various forms.

ICS (measured in times of ordering, holding and shortage costs) and profitability.

The study plays a significant role by bringing out the difference made by the use of ICS in specific business (here, selected livestock farms, typical of
small-scale industries at the second largest West African city of Ibadan, south-western Nigeria).

PROBLEM STATEMENT

Out of stock in any organization, especially farms that produce goods and want to increase its profit, is always a major inventory problem. This is so because inventory is the stock of any item or resources used in such organization for the production of goods. Thus, inventory control is a factor among others that may affect profitability.

Literature Review:

Inventory can otherwise be called stock. Descriptively, it is the aggregate of various kinds of all items in a place. They constitute of basic raw materials, semi-finished (in-process) goods and materials, sub-assemblies, supplies for workshop and office, and finished goods.

The need for an inventory in any organization includes: provision to obtain discounts from bulk-purchase; being natural and fundamental part of production process; anticipation of normal demand; meeting emergency shortages; care for obsolete items and over-ordering arising from possible not well organized stock control; absorption of wastages; uncertain fluctuations and taking note of when, how and types of stocks to order and from where.

Besides the overall total price of the materials (that is, the main costs of buying), other cost associated with inventory include; replenishment (or ordering), carrying (or holding) and stockout (or shortage) costs. From the foregoing, it is evident that inventory in any organization is a veritable aspect that deserves utmost care in managing. This is what organisations can only achieve with adequate control of inventory.

Thus, a look is taken at inventory control. Inventory control is a set of policies and operating procedures that are designed to maximize a company’s use of inventory so that it generates the maximum profit from the least amount of inventory investment without encroaching upon customer satisfaction levels. Further, it is the supervision of supply, storage and accessibility of items in order to ensure an adequate supply without excessive oversupply (Rieva, 2010; Eroghe, 2014; Hmida, 2013). Inventory control involves the procurement, care and disposition of materials.

Typically, inventory control represents 45% to 90% of all expenses for business. It is needed to ensure that any organization has the right goods in place to avoid stock-outs, prevent shrinkage or spoilage or theft, and to provide proper accounting (Counselors to America’s Small Business, 1984). Also, it provides a safeguard for variations in raw materials delivery time, as well as in in finished goods delivery to customers (meeting with delivery dates). It helps organisations to take advantage of economic purchase order size.

The general objective of inventory control is to maintain a system that minimises total cost, while specifically, it establishes that the amount of stock to be ordered is optimal as well as the period between orders.

Furthermore, some important terminologies relating to inventory control include: Lead time, economic order quantity (EOQ), economic batch quantity (EBQ) and safety stock. Inventory control from literature, thus far, has been shown to be associated with overall performance of organisations. Generally, performance can be measured in terms of output volume, sales volume and profitability among others. This paper is concerned with profitability aspect of performance in the selected small-scale livestock farms.

Profitability is the state or condition of yielding a financial profit or gain. It is often measured by price to earnings ratio (Dr. Ca, Machin and Reenen, 2011). Also, profitability can be defined as either accounting profits or economic profits. It is the primary goal of all business ventures. Without profitability, business will not survive in the long run. Profitability is measure with income and expenses (Hofstrand, 2009).

In all, it is obvious, with regard to business organizations either big, medium or small (like the livestock farms under study), that monetary (or financial) gain or profit is actually what profitability
can be known as. It is also important to point out that profitability is one of the measures of any business organisation’s performance. Irrespective of the manner of its measurement, or how it is determined, profitability stands out as the primary and ultimate goal and objective of all business organisations. Consequently, every business will only survive in the long run, with profitability well pursued (Koumanakos, 2008; Harrington, 1990; Geonatilake, 1984).

It is in view of the importance of profitability to the long-run survival of all business organizations that this study has chosen to evaluate its relationship with inventory control; even Nigerian small-scale industries, here typified by the selected livestock farms.

Methodology

Sample

Selected 5 unlisted livestock farms (typical of a small-scale industry) in Ibadan (the second largest African city in Nigeria) purposively chosen to determine the relationship between ICS and the impact of inventory control system on profitability (an important aspect of any organisation’s performance). Data were extracted from accounting records of the farms for the period covering 2009 to 2013 accounting years. Inventory Control System was measured in terms of ordering, holding and shortage costs as variables. Use was made of the total of these costs with their corresponding total profits for the specified year. Correlation Coefficient, Coefficient of Determination and t-statistic are the means of testing the relationship between Inventory Control and profitability as well as the impact of same on profitability respectively. Where Correlation Coefficient $r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{(N \sum x^2 - (\sum x)^2)(N \sum y^2 - (\sum y)^2)}}$

Descriptive statistics and Correlation Coefficient analysis of the variables are as shown in tables 1 and 2 respectively. The results of both tests are as shown below:

**Table 1:**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Observation</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>year</td>
<td>5</td>
<td>2011</td>
<td>1.581139</td>
<td>2009</td>
<td>2013</td>
</tr>
<tr>
<td>Cost</td>
<td>5</td>
<td>12404.44</td>
<td>2102.671</td>
<td>9540</td>
<td>14720</td>
</tr>
<tr>
<td>Profit</td>
<td>5</td>
<td>40500</td>
<td>11510.86</td>
<td>30000</td>
<td>60000</td>
</tr>
</tbody>
</table>
Table 2:

| Dependent variables | Correlation Coefficient | Standard Error | t     | P>|t>| [95% Conf. interval] |
|---------------------|--------------------------|----------------|-------|------------------------|
| profit              | 0.8207                   | 0.060253       | 2.49  | 0.089                  | -0.0418304  .3416734 |
| costs               | 1.0000                   | 2517.861       | 2.52  | 0.087                  | -1680.339   14345.58  |

R-squared = 0.6736  Adj R-squared = 0.5648  Prob> F = 0.0886  Root MSE = 1387.1  F(1, 3) = 6.19

**Discussion on Results**

The results descriptive analysis as reported in table 1 show profit mean value of 40.5 million for a corresponding cost mean of 12.4 million. Further, results of correlation coefficient analysis give \( r = 0.82 \) from table 2. This means that inventory control is very highly and positively correlated with profitability. Thus indicating very clearly that profitability increases with inventory control variables.

Further implication is that if these farms keep up with more of such good management practices of inventory control variables, there would be more profitability. The results also showed that inventory control has a significant impact on profitability with Coefficient of Determination and t-value of \( R^2 = 0.67 \) or 67% and \( t = 2.49 \) respectively. \( R^2 \) value of 67% tells that 67% of the selected farms’ profit could be explained by IC. This further implies that 33% of the profit could also be due to some other variables not taken into consideration by this study.

The above assertions are obviously in line with the results of a related study where the accumulation of more inventories were found to result in decrease in profit. The study also suggested that increase in strong cost of inventory might be the reason for such decrease in profit (Awan and Ahmed, 2013).

**Conclusion**

The study concluded that the use of Inventory Control could make and actually made a difference in the selected livestock farms typifying small-scale industries. This was evident in the proportionate and increasing profit figures within the period of the study (2009 – 2013) as the profit figures were found to be positively correlated with inventory control which also had a significant impact.

Other related farms in the livestock industry among some other outfits in the wide range of small – scale industries should strive at making use of inventory control as a way of improving on their profitability in particular;

These farms should keep up with their present practices of (inventory control) management so as to continue making the attendant profits. This reckons on all other such small-scale (livestock) farms to imibe the culture of good IC management practices in order to improve upon , and increase adequately their profits.

It is also recommended that further studies could be done on the relationship (effect) of IC on performance measured in terms of output and sales profits.

**References**


Rieva, L. (2010) *Start Your Own Business: The only Start-up Book you will ever need*. Entrepreneur Press, IRVINE; USA.


