Inventory Management Practice in Micro and Small Enterprise: The Case of MSEs’ Manufacturing Sub Sector Arsi Zone, Ethiopia

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Abstract
The aim of this research was to empirically examine the inventory management practice of micro and small firms. In order to address the research objective, target population of the study were Micro and Small enterprises operating in manufacturing sub sector in four selected towns in Arsi Zone. Data for the study were collected from 188 micro and small enterprises (MSEs). The descriptive statistics result indicate that MSEs in the target study area found to be unfamiliar with the major scientific inventory management techniques and highly depend on manual base record keeping of their inventory as well as thumb based judgment of the inventory related decisions. Therefore, it is recommended for policy makers, universities, NGOs and any concerned party who are engaged in supporting of micro and small enterprises need to work in providing the necessary training and resource to promote the inventory management practice of MSEs which will result in increasing their competitiveness and organizational performance. That would enhance their contribution to economic development of the country. Note that, the conclusion obtained from this study may not be used to generalize to large and medium scale as well as overall sectors since its focus is only from the MSEs Manufacturing sub sector points of view.

Keywords: Inventory Management, Micro and Small Enterprise, Arsi Zone, Manufacturing

1. Introduction
Micro and Small Enterprises have a strategic importance in developing countries like Ethiopia; they contribute to national income, employment, exports, and entrepreneurship development. The development of Micro and Small Scale Enterprises is the central focus of the Ethiopia industrial development strategy as it is stated in GTP. Therefore, in the development process of any country, the performance of MSEs based on competition, productivity and efficiency will play a significant role in the economy. It is observed from literature that making use of formal Inventory Management practices is one of the ways to acquire competitiveness.

According to Stevenson (2010), Inventory Management is defined as a framework employed in firms in controlling its interest in inventory. It includes the recording and observing of stock level, estimating future request and settling on when and how to arrange (Adeyemi & Salami, 2010). On the other hand Deveshwar and Dhawal (2013) proposed that inventory management are methods that companies use to organize, store and replace inventory, to keep an adequate supply of goods at the same time minimizing cost.

A study conducted in Kenya by Naliaka V.W. & G.S. Namusonge (2015) identified that inventory management affects competitive advantage of manufacturing firms. Competitive advantage comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions Li et al., (2006).

The inventory investment for a small business takes up a big percentage of the total budget, yet inventory control is one of the most neglected management areas in small firms. Many small firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of the slack inventory management or inability to control the inventory efficiently.

As to the knowledge of the researcher, in Ethiopia the inventory related aspects of SMEs have not yet attracted the attention of researchers and policy makers. The SMEs, specially manufacturing enterprises, which contribute significantly to the economy in several ways, in Ethiopia, MSEs sector is the second largest employment-generating following agriculture (CSA, 2005:34-35). However, the inventory management aspect of factor that affect the MSEs competitiveness and performance is not attract the attention of researchers and policy makers. Taking this gap in to consideration this paper therefore examined the inventory management practice on micro and small enterprises found in four selected towns in Arsi Zone, Oromia, Ethiopia.

2. Review of Related Literature
2.1 Theoretical Review
According to Stevenson (2010), Inventory Management is defined as a framework employed in firms in
controlling its interest in inventory. It includes the recording and observing of stock level, estimating future request and settling on when and how to arrange (Adeyemi & Salami, 2010). On the other hand Deveshwar and Dhawal (2013) proposed that inventory management are methods that companies use to organize, store and replace inventory, to keep an adequate supply of goods at the same time minimizing cost. Choi (2013) indicates that effective inventory management is essential in the operation of any business. Thus, keeping stock is used as an important strategy by companies to meet customers’ needs without taking the risk of frequent shortages while maintaining high service level. As Axsäter (2006) describes that inventories make high cost, both in the sense of tied up capital and also operating and administrating the inventory itself. It is argued that time from ordering to delivery of replenishing the inventory, referred to as the lead time, is often long and the demand from customers is almost never completely known (Axsäter, 2006). Therefore, managers should consider how to achieve the balance between good customer service and reasonable cost, which is the purpose of inventory management, involving the time and volume of replenishment (Borowiec and Liedberg, 2009).

To this end inventory in many small business owners is one of the most visible and tangible aspects of doing business. Raw materials, in process and finished goods represent various forms of inventory. Each type represents money tied up until the inventory leaves the company as purchased products. Likewise, merchandise stocks in a retail store contribute to profits only when their sale puts money into the cash register (Pandey, 2004). Basically, inventory refers to stocks of anything necessary to do business. These stocks represent a large portion of the business investment and must be well managed in order to maximize profits. Unless inventories are controlled, they are unreliable, inefficient and costly. Inventory is an idle stock of physical goods that contain economic value, and are held in various forms by an organization in its custody awaiting packing, processing, transformation, use or sale in a future point of time.

Inventory is generally refers to raw materials, work-in progress (WIP) and finished goods (Arnold, 2008; Cinnamon, Helweg-Larsen, & Cinnamon, 2010; Gitman, 2009). Raw materials are concerned with the goods that have been delivered by the supplier to purchaser’s warehouse but have not yet been taken into the production area for conversion process (Cinnamon et al., 2010). Work in progress (WIP) concerns are when the product has left the raw material storage area, until it is declared for sale and delivery to customers. In this process the working capital must be considered in terms of reducing the buffer stocks, eliminating the production process, reducing the overall production cycle time. The raw materials and finished goods must be minimised in the production area. WIP must be carefully examined to justify how long it takes for products to be cleared for sale. This stage is normally done by the quality control (QC) procedures (Birt et al., 2011; Cinnamon et al., 2010). Finished goods refer to the stock sitting in the warehouse waiting for sale and delivery to customers.

They could be sitting in the warehouse or on the shelf for quite some time. The owner/manager of the business should find what options are available to dispose of the slow moving items. Should the stock be repacked or reprocessed, and sold at lower discount prices. Sales and operations planning can reduce or eliminate the need for finished goods. The best example of stock management is car manufacturing. The manufacturers normally used the JIT system to deliver finished products. In this way they minimize or eliminate both raw material stock and work in progress, as the stock is now in finished goods (Brealey, Myers, & Allen, 2006; Cinnamon et al., 2010; Van Horne & Wachowicz, 2008). There are theories utilized in carrying clarity to the investigation of the role of stock administration on operational performance. The major theories includes, the theory of Constraints, Lean Theory and Stochastic Theory to build the critical concerns regarding the impacts of inventory management approaches on the profitability of manufacturing firms.

2.2 Inventory Management in SMEs

Many researchers have analysed different inventory management practices and performance and these studies have amassed an enormous knowledge related to inventory management and organizational performance. Maria and Jones (2003) argue that implementation of proper inventory management practice involves providing high quality products at relatively less cost. They further pointed out that it is essential to establish a daily ordering and frequent calculation of inventory turns. On the other hand Ballou (2000) argues that inventory cost should be considered while taking inventory decisions. He found that inventory carrying costs typically range from 20% to 40% of inventory value. Palmer and Dean (2000) are of the opinion that selection of right inventory management practice is a must for a company’s inventory management performance.

Gill, Biger and Mathur (2010) argue that excess inventory is an operational liability, because it uses valuable storage space, increases inventory costs. Raw material ordering frequency is identified as an important factor contributing to inventory cost. Frequent ordering in small quantity is considered as an important strategy. This is very relevant in the context of SMEs. This is because SMEs generally don’t get the benefits of quantity discount. Their purchase requirement quantity of material is normally less to enable them to get these benefits. Hence for SMEs frequent purchasing is appreciated.

The management of SME studied viewed the need for a more formal procedure to calculate its inventory policy parameters. The growing investment in inventory combined with an increasing number of backorders and
lost sales lead to lower profitability. Therefore it was decided to follow a more scientific approach than the currently used rules of thumb to establish inventory policy parameters with the objective of optimizing inventory cost.

Koumanakos (2008) in his study aimed at testing the hypothesis that efficient inventory management leads to an improvement in a firm’s financial performance. The results revealed that the higher the level of inventories preserved, departing from a lean manufacturing, by an enterprise the lower is its rate of returns. Jonsson and Mattson (2008) studied the use of material planning methods to control material flow inventories of purchased items. The study explored the perceived planning performance of material planning methods used to control material flow in different types in manufacturing and distribution companies. They also evaluated the difference in perceived planning performance depending on the way planning parameters are determined and the methods used. Altogether five material planning methods were studied based on a survey data. However, Koh, Deirbag, Bayraktar, Tatoglou and Za (2007) probed a more prominent issue regarding the underlying dimensions of Supply Chain Management (SCM) practices and to test a framework identifying the relationships among various SCM practices, operational performance and SCM related organizational performance. The survey study was conducted on SMEs in Turkey. The study brought out that both strategic collaboration and lean practices (SCLP) and outsourcing and multi suppliers (OMS) factors have direct positive and significant impact on operational performance of SMEs. However, the study found that both factors have no direct impact on SCM related organizational performance and only indirect and significant positive effect. Whereas, the observation by Teunter, Babai and Syntetos (2012) was that ABC analysis is commonly used as an inventory management practice in SMEs worldwide.

To exercise inventory planning and control, the understanding of the factors influencing inventory management is necessary. This will enable SMEs to select an appropriate inventory management practice in their enterprise. Though the role of inventory management practices of a firm, their inventory cost on order quantity and hence on inventory performance is well explained in theory, an empirical evaluation of the same is not done so far in the context of SMEs, particularly in developing countries.

3. Methodology
In order to address the research objective, a quantitative survey approach is employed. The target population of this study were micro and small scale enterprise engaged in manufacturing sub sector in Arsi Zone four purposively selected towns. Target sample sizes of 200 MSEs in manufacturing sub-sector were selected using stratified random sampling techniques as respondent for this study. The strata were manufacturers of metal, wood, handicraft, food processing, construction and local made electronics products. For this study questionnaire has been designed and distributed to sample respondents/informants (MSE owners). A set of questions on each aspect of the inventory management practice have been derived from extensive literature review. All questions have been organized by using Likert scale ranging from 1 to 5 points. The questionnaire has been translated in to local language. The data collection also assisted by local enumerators. So as to ensure the reliability of instrument, the researcher conducted a pilot test on 20 respondents and results were considered accordingly. A Cronbach's alpha 0.79 were obtained. A reliability coefficient of 0.70 or higher is considered "acceptable" in most social science research. To analyse the data obtained from questionnaire SPSS v.20 software was used.

4. Data Analysis and Interpretation
This part begins with an analyses of the demographical data gathered from respondents. From the total of 200 questionnaires distributed through enumerators to owners of each micro and small enterprise in the selected towns, only 188 were completed and returned. Therefore, the valid number of respondents in this study is 188. Thus, the demographic profile of the respondents which is considered crucial for this study is presented as back ground information is presented as follows:
Figure 1. Gender and Educational Status of respondents

Figure 1 illustrate the gender status of respondents indicate that majority of MSE owner participated in this study were male which is 68.1% (128) and the remaining 31.9% (60) were female. As it depicted on the chart majority of respondents 39.4% are attended basic or elementary school level, 31.6% at high school level, 58.5% are diploma holder and 10.5% are bachelor degree holders. This shows that as they are top level managers of the selected organization they are not well educated. Therefore, it was the right decision to translate the questionnaire to local language.

Figure 2 Number of Employees in target MSEs

According to figure 2 the median number of employee in each categories of MSE manufacturing sub sector is four (4) and the maximum number employee are 20 whereas the minimum is one. This result is consistence in accordance with the definition given for micro and medium enterprise in Ethiopia context.

Figure 3 Participants Manufacturing sub category

Concerning to the target manufacturing sub sector of respondents, as indicated in figure 3, 30%, 22%, 15%, 13%, 13% and 7% of respondents are from construction works, handicraft, wood work, metal work, local electronics products, and food processing manufacturing enterprise respectively. This shows that almost all respondents fairly representative of the manufacturing subsector under the categories of micro and small enterprise.
4.1 Descriptive analysis of Inventory Management
This section focuses on the descriptive analysis of inventory management practices, pursued by MSEs. Therefore, data related to each construct and dimensions are summarized and the results are presented below.

![Inventory Data Processing System](image1)

**Figure 4 Inventory Data Processing Systems**
As indicated in figure 4, almost large majority 181 out of 188 micro and small enterprises are using manual inventory controlling system. This implies that a manual inventory system relies heavily on the actions of people, which increases the possibility of human error. People might forget to record a transaction or simply miscount the number of goods. This results in needless additional orders that increase the MSEs’ inventory carrying costs and use up precious storage space. Inaccurate physical counts could also result in not ordering enough of a product, meaning the business could run out of a crucial item at the wrong time.

![Inventory Record Keeping System](image2)

**Figure 5 Inventory Record Keeping System of MSEs**
Based on the result shown in figure 5, majority of MSEs 85.12%(160) used a perpetual stock taking system and the remaining 14.29% and 0.6% used annual/periodic stock taking and stock taking when necessary respectively. This indicate that MSEs keeps track of inventory balances continuously, with updates made automatically whenever a product is received or sold. Purchases and returns are immediately recorded in the inventory account. However, this system requires the use computerized system which is not currently used by the target MSEs.

![Inventory Cost](image3)

**Figure 6 Inventory Costs of MSEs**
According to respondents’ response shown in figure 6, MSEs incurred high percentage (53.85%) of
ordering cost and 33.33% risk cost (pilferage or obsolescence of items). Relatively small percentage is incurred for inventory service cost and capital tied up cost 0.64% and 12.18% respectively. This implies that the thumb rule based decision of their inventor level made MSEs to invest higher ordering and risk cost.

![Inventory Management Practice](image)

Figure 7 Inventory Management Practice Adopted by MSEs

As it is indicated on the above figure 7, respondents were asked to indicate their level of agreement about the implementation of major inventory management activities in their respective enterprises. To this end, concerning to the existence of Economic order quantity (EOQ) decision majority of respondents disagree (42%) and (14.4) remains neutral. On the other had majority respondents 61.2% are agree on the existence of thumb based demand forecasting technique in their respective enterprise. Beside this highest percentage of respondents disagree about the existence of major inventory management techniques ABC analysis (39.9% &17% neutral), vendor management inventory (53.2) and just in time system (45.7 & 13.8 neutral). From this figure it is possible to conclude that majorities of MSE owner are not in the position to implement scientific inventory management techniques and they are not even familiar with scientific methods of managing their inventory. This also indicates that little emphasis is given for inventory management areas of their business operation or they may not consider it as a critical factor for their performance.

5. Conclusion and Implication for MSE owner

To begin with how well inventory management practiced in MSEs firms’, the study found that Micro and small enterprises under the manufacturing subsector in the study area are not in the position to properly manage their inventory using scientific procedure such as economic order quantity, ABC analysis, computerized system and Just in time in time as well as vendor management inventory. Since majority of MSEs owners are not well educated and have limited capital, they intensely control and record inventory related data manually and they are also accustomed by judgment base forecasting about the market demand. Basically, a lack of appreciation for inventory management practice among the entrepreneurs or owners of MSE, the lack of qualified staff and unfamiliarity with scientific methods are the major factors contributing to poor inventory management practices. In order to enhance once own enterprise inventory management practice; MSEs need to have the necessary skills and knowledge about the use of scientific inventory management techniques and decision models. Accurate information flow and recording keeping inventory related data is critical for the successful management of inventories in an enterprise. Therefore MSEs should make a change from manual record keeping to the application of ICT based or computerized inventory management system. Even though the case companies have some financial limitation, but this ICT based platform can bring a lot benefits for their future inventory management.

It is also recommended for policy makers, universities, NGOs who are engaged in supporting of micro and small enterprises need to work in providing the necessary training and resource to promote the inventory management practice of MSEs which will result in increasing their competitiveness and organizational performance. That would enhance their contribution to economic development of the country.

6. Limitation and Recommendation for Future Research

Like any other study, this study has several limitations. Instrument as a questionnaire for the measurement constructs are not standardized items. However, they are abstained through intensive literature review and statically validated. Yet, it is recommended for future research to revalidate measurement scales used under this
research with better representative observations. Data were also collected from MSEs found in four selected towns in Arsi zone manufacturing sub sector. Therefore it may not be used to generalize for the whole sectors at Zone or national level. This study is conducted by taking the context of manufacturers in micro and small enterprises. However, the finding may not work for medium and large scale manufacturing firms. Therefore, it is recommended for future research to investigate it in the context of large and medium size manufacturing industry.

Reference
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