Materials management performance in machine tool SMEs Kerala: What factors do influence them?

Rajeev Narayana Pillai
Industrial Engineering, NSS College of Engineering

Abstract **- Small and Medium Enterprises (SMEs) are one of the most important driving forces in the development of a country because of its major contribution in terms of number of enterprises, employment, industrial output and exports. However SMEs, developing countries like India, face constraints in areas such as technology, finance, marketing etc,to name a few. Due to globalization, the process of continuing integration of the countries in the world has opened up new opportunities for SMEs of developing countries to cater to wider international market. It is observed from literature that pursuing appropriate Materials Management (MM) practice is one of the ways of attaining competitiveness, by effectively managing and minimizing investment in material inputs. Materials management can therefore be one of the determinants of the operational performance of SMEs. The key problem is whether SMEs in Kerala follow proven IM practices with an intension to reduce their material cost and enhance their performance. If so, what are the MM practices pursued by these SMEs? What are the factors which influence the inventory cost and MM performance of enterprises? These questions have been studied here with reference to engineering SMEs located in the city of Palakkad and Trichur, Kerala.**

Index Terms **- Material cost, Engineering Industry, small and medium enterprises.**

1.INTRODUCTION

Small and Medium Enterprises (SMEs) occupy a place of strategic importance in developing as well as developed countries owing to its considerable contribution to national income, employment, exports, and entrepreneurship development (1). The competition due to economic reforms and globalization has put more pressure on SMEs (Huin, 2004). It is observed from literature that making use of appropriate Material Management (MM) practices is one of the ways to acquire competitiveness among others (2). The major functions of inventory as: (1) to support and provide necessary inputs for manufacturing and (2) to protect companies against uncertainties that arise from such cases as discrepancy between demand and production, machine deterioration, and human errors, among others. They further argue that inventory cost (ordering and holding expenses) and inventory turnover are very important in deciding the MM strategy of firms. MM has significance in an inventory intensive manufacturing industry, because effective MM will enable an enterprise to minimize material cost and the consequence of shortage of materials on the other.

What are the factors that influence the material costs in SMEs? What are the factors that influence their MM performance? Is there any relationship between material cost and ITR? It seems that no study has attempted to answer these questions in the context of engineering SMEs of Kerala. Therefore the objective of this paper is to bridge this gap in the context of Engineering SMEs in Kerala. The paper is organized in five sections. Literature review is presented in section 2 and section 3 presents the objectives, scope and methodology. Section 4 comprises analysis of MM in SMEs followed by conclusions of the study explained in Section 5.

2.INVENTORY MANAGEMENT IN SMES: A REVIEW OF LITERATURE

Many researchers have studied different MM practices and performance and these studies have amassed knowledge related to MM and operational performance of enterprises. Maria and Jones (2003) found that implementation of MM practice involves cost reduction. Ballou, (2000) argues that inventory cost is a crucial determinant while making inventory decisions. He found that inventory carrying costs typically range from 20% to 40% of inventory value. Palmer and Dean (2000) established a relationship

between MM practice and economic performance of a company.

The linkages between MM and operational performance have been discussed by many authors in the context of large enterprises. Reducing throughput time by faster value addition to the materials clearly would lead to a competitive edge. This would lead to advantage on the inventory cost front also. Inventory costs are reduced as materials spend less time in the plant. The importance of MM as a measure of operational performance has been studied by Rabinovich et al (2003).

Chandra and Grabis (2005) argue that a reduction in the inventory replenishment lead-time allows maintaining safety stock and improving customer service. Wallin et al (2006) viewed lead-time as an important inventory element. Smaller purchasing lots imply more work and effort in purchasing department. However, Rajeev (2015) 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.

A case study of MM in a UK based SME found the importance of categorizing stock and setting ordering policies in optimizing inventory costs (Flores, Wang, & Burgess, 2003). The SME studied viewed the need for a more formal procedure to calculate its maximum and minimum inventory level. In their own words, the growing investment in inventory combined with an increasing number of backorders and lost sales resulted in lower profitability. Therefore it was decided to follow a more scientific approach than the currently used rules of thumb to reduce their material cost.

To exercise materials management, the understanding of the factors influencing MM is necessary. This will enable SMEs to select an appropriate MM practice in their enterprise. Though the role of MM practices of a firm is well explained in theory, an empirical evaluation of the same is not done so far in the context of Kerala SMEs. In this context, the present study is a very relevant attempt to identify the factors influencing mterial cost and ITR with respect to the SMEs in Kerala.

3.OBJECTIVES, SCOPE AND METHODOLOGY

Objectives

1) To understand MM practices, material cost and related issues in Kerala SMEs.
2) To probe the factors that influence material cost and ITR in Kerala SMEs.

Scope and methodology of the study

The study focuses on engineering industry in the state of Kerala in India. Engineering industry is the most important industry concentrated in Kerala (DIC, 2021). It is found to be material intensive having formal or informal relationship with various large enterprises located in the city. The quality and cost of engineering products depends on the performance level of industry and their automation levels. Therefore, this sector is considered appropriate for our study.

As there is no systematic database of SMEs in Kerala, we decided to focus on a maximum number of 97 SMEs. From these SMEs we gathered data through a structured questionnaire having five sections on basic features, IM practices and performance, economic variables, production details, factors hindering/ facilitating MM. Respondents were asked to gauge the extent to which they agreed with the given question. Mostly items were formulated as short statements and respondents were asked to provide their views on a five point Likert scale. The data collection exercise was carried out by the author during September 2021 to January 2022. From 97 SMEs covered, seven enterprises were eliminated due to incomplete information. The methodologies adopted for the data analysis are descriptive analysis, rank correlation and regression analysis.

4.ANALYSIS OF IM PRACTICES AND IM PERFORMANCE IN INDIAN SMES

Since engineering SMEs are material-intensive in nature with a significant portion of their production cost involving material related cost, it is likely that the entrepreneurs recognize its importance. It is with the above backdrop that understanding the present

perception of SMEs about the importance of MM is appropriate. Out of 90 SMEs studied, all SMEs stated that MM is very important for a firm's performance. This brings out that the level of awareness about the need and importance of MM practices is high among the engineering SMEs of Kerala.

Given this, it is important to look at these SMEs to ascertain how many of them follow MM practices and what kinds of MM practices do they follow. Table1 presents the list of SMEs follow MM practices. The table shows that 22 SMEs did not pursue any practice. This shows that there are some SMEs which consider MM practice important for firm performance but at the same time do not pursue any kind of IM practices. This is primarily due to lack of motivation on the part of the entrepreneurs. This may be due to the fact that though they know that MM is important, they have not realized its benefits.

Sl. No	IM practice followed	Number of firms
1	No practice	22
2	Thumb rules	24
3	EOQ (Economic Order Quantity)	10
4	ABC (Always Better Control)	20
5	Computerized IM	4
6	Just-in Time (JIT) / Vendor Managed Inventory (VMI)	10
Total		90

Table1. MM practices followed in SMEs.

Among various kinds of MM practices, the most significant one pursued by SMEs is that based on thumb rules: 24 of the 90 SMEs followed some informal practices based on thumb rules. The second most significant MM practice followed by SMEs is EOQ (10 firms). About 20 SMEs follow ABC whereas those SMEs which pursued computerized MM techniques are only four and about 10 of them followed JIT/VMI. All these bring out that modern MM practices are absent among SMEs, even in an inventory-intensive engineering industry.

An important aspect that might determine the kind of MM practice followed by SME is the frequency of material purchase. In our sample we found that 12 SMEs purchased Raw Materials on a daily basis, 32 SMEs placed orders for Raw Material (RM) on a weekly basis and 23 of them on a fortnightly basis whereas 21 SMEs did it on a monthly basis. Only two SMEs purchased raw materials on a quarterly basis. Thus it is clear that majority of the machine tool SMEs resorted to raw material purchase ranging from a daily basis to a monthly basis. This may be due to the limited financial capability of SMEs.

How frequently SME would resort to raw material purchase might depend upon the kind of MM practice followed by it. Therefore, it is necessary to understand how the raw material ordering frequencies of SMEs vary vis-à-vis the kind of MM practices pursued by them. Table 2 shows such a distribution. It appears that those SMEs which did not pursue any kind of IM practice resorted to less frequent raw material ordering. Whereas those SMEs which adopted computerized IM/JIT/VMI resorted to more frequent raw material ordering.

IM Practice	RM Ordering Frequency					
	Daily	Weekly	Fortnightly	Monthly	Quarterly	Total
No Practice	1	5	10	6	0	22
Thumb Rules	3	5	7	10	0	25
EOQ	2	3	3	2	0	10
ABC	2	10	3	2	2	19
Computerized IM	0	4	0	0	0	4
JIT/ VMI	4	4	0	2	0	10
Total	12	32	23	21	2	90

Table 2. MM Practices and Raw Material Ordering Frequency.

To further ascertain whether there is any statistically significant relationship between the two variables, we carried out rank correlation analysis: raw material ordering frequencies were ranked from one to five as follows: Quarterly (5), Monthly (4), Fortnightly (3), Weekly (2) and Daily (1). IM practices are ranked from one to six as follows: No practice (6), Thumb rules (5), EOQ (4), ABC (3), Computerized IM (2), and JIT/VMI (1). The rank correlation analysis brought out that there is a statistically significant positive correlation (0.343) between raw material ordering frequencies and MM practices. The type of production may influence the MM practice pursued by SMEs. Table 3 presents such a distribution. It gives some indication that those SMEs which follow job shop/batch production processes either do not have any MM practice or follow thumb rule/EOQ/ABC based MM practice. On the other hand those SMEs which have mass production/flow shop production processes adopt computerized IM/ JIT/VMI practices. The correlation analysis brought out that there is a statistically significant positive (0.825) correlation between the two. This is understandable because production types such as mass production and flow shop production require more frequent raw material

purchases and are compatible with better inventory practices. Whereas job shop/ batch production systems do not call for frequent raw material purchase and can be managed even without any MM practice.

Type of IM Practice	Type of Production				
	Job shop	Batch Production	Mass Production	Flow Shop	Total
No Practice	10	12	0	0	22
Thumb Rules	15	8	1	0	24
EOQ	3	5	2	0	10
ABC	10	2	2	6	20
Computerized IM	0	0	1	3	4
JIT/ VMI	0	0	4	6	10
Total	38	27	10	15	90

Table 3 Type of production and MM practices

It is appropriate to know whether inventory cost per sales has any relationship with either MM practices or raw material purchase. To ascertain the relationship between the number of raw material ordering frequencies and inventory cost per sales, we did a rank correlation analysis. Inventory cost per sales is defined as the ratio between the yearly inventory cost and the annual sales, expressed as a percentage. The inventory costs are ranked from one to five to cover the ranges of 0 -5 %, >5 – 10%, >10 – 15%, >15 – 20% and above 20% respectively. Similarly raw material ordering frequencies is numbered from one to five ranging from daily (5), weekly (4), fortnightly (3), monthly (2) and quarterly (1). The statistically significant negative correlation between the two variables implies that if the number of raw material ordering frequency is more inventory cost per sale is likely to be less.

RM Ordering Frequency	Inventory Cost per Sale					
	0 - 5	>5 - 10	>10 – 15	>15 – 20	> 20	Total
Daily	1	3	5	3	0	12
Weekly	2	17	8	5	0	32
Fortnightly	5	14	0	3	1	23
Monthly	1	0	1	10	9	21
Quarterly	1	0	0	1	0	2
Total	10	34	14	22	10	90

Table 4. Inventory cost per sales and Raw Material Ordering Frequency

Since we have already seen positive correlation between IM practices and raw material ordering frequency and a negative correlation between raw material ordering frequency and inventory cost per sales, it is likely that there will be a negative correlation between IM practices and inventory cost per sales. The distribution of SMEs in terms of inventory cost per sales vis-à-vis IM practices is presented in Table 5.

IM Practices	Inventory Cost per Sale					
	0 - 5	>5 - 10	>10 – 15	>15 – 20	> 20	Total
No Practice	1	3	9	8	1	22
Thumb Rules	2	16	6	0	0	24
EOQ	4	3	3	0	0	10
ABC	5	12	0	3	0	20
Computerized IM	3	0	1	0	0	4
JIT/ VMI	3	7	0	0	0	10
Total	18	41	19	11	1	90

Table 5. Inventory Practices and Inventory Cost per Sale

Variables	Correlation Coefficient
Raw Material Ordering Frequency and IM Practice	0.343**
Inventory practices and production type	0.825**
Inventory Cost per Sales and IM Practice	-0.522**
Inventory Cost per Sales and RM Ordering Frequency	-0.260*

*Correlation is significant at the 0.05 level (2-tailed).

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

Table 6. Rank Correlation between Variables.

From the above analysis we are able to identify factors such as raw material ordering frequency and production type which influence the inventory cost per sales. To ascertain their joint influence we carried out a regression analysis where inventory cost per sales is the dependent variable and IM practices, raw material frequency are the explanatory variables. For IM practices we used two dummy variables- $dummy_{IM1}$ and $dummy_{IM2}$. $Dummy_{IM1}$ represented SMEs which pursued IM practices based on thumb rules, EOQ, ABC and dummy $_{IM2}$ represented SMEs which pursued modern IM practices such as computerized IM, JIT/VMI.

To represent raw material purchase frequency we used a dummy variable D_{RF} where the dummy variable took the value of zero for monthly and quarterly purchases and one for daily, weekly, and fortnightly purchases. Similarly for the production type we used a dummy variable D_{PT} where the dummy variable took the value of zero for those SMEs which follow job shop/batch shop production and one for those follow mass production and flow shop production. Thus the regression equation is as follows: $INV_{c/s} = b_0 + b_1 D_{IM1} +$

$b_2D_{IM2} + b_3D_{RF} + b_4D_{PT,}$ Where b_0, b_1, b_2, b_3, b_4 are beta coefficients of the variables. The regression results are presented in Table 7.

SMEs □	Machine Tool
D1M1	-0.622 (-5.914) [0.000]
DIM2	-0.528 (-3.550) [0.001]
DRM ORDERING FREQUENCY	-0.023 (-0.261) [0.795]
DPRODUCTION TECHNOLOGY	-0.093 (-0.700) [0.486]
Constant	13.582 (12.923) [0.000]
Adjusted R^2	0.637
F	9.750 (0.000)
N	90

Values within the parentheses and square brackets are 't' values and significance level.

Table 7. Regression Analysis of Inventory Cost per Sale with IM Type, RM Ordering Frequency and Production Type (Dependent Variable: Inventory Cost per Sales

The model is statistically significant as the F-value is significant at 0% level. The model has a significant explanatory power as it explains almost % of the 64 variations in inventory cost per sales as reflected by the adjusted R^2. Though the values of coefficients of all the variables are negative indicating their negative relationship with inventory cost per sales only the coefficients of two dummy variables of the IM practices are statistically significant. This brings out that those SMEs which pursue IM practices either based on thumb rules, EOQ, ABC or based on computerized IM, JIT/VMI will be able to realize or achieve lower inventory cost per sales compared to those SMEs which do not pursue any MM practice. This implies that adopting at least some kind of an MM practice is to the advantage of SMEs.

The analytical description of IM practices of SMEs from various dimensions enabled us to understand the extent and diversity of IM practices pursued and its relationship to the inventory cost per sales of SMEs, among others. What is particularly important is that those SMEs which adopted a superior IM practice are able to achieve lower inventory cost per sales. It is with this backdrop that an understanding of ITR in SMEs has to be understood. ITR is defined as the ratio between the annual sales and the amount spent for materials required for production. The ITR is the most commonly used technique to study the IM performance of enterprises (Vergin, 1998; Rabinovich et al., 2003; Vastag & Whybark, 2005; Koumanakos, 2008; Rao & Rao, 2009). Zeng and Hayya (1999) used ITR in evaluating management effectiveness and observed that ITR is a good measure of IM effectiveness of enterprises.

Considering the above it is appropriate to understand the variance of ITR among SMEs of our study. The ITR ratios of SMEs are presented in Table 8. It is significant to note that 58 SMEs had an ITR up to five; 23 SMEs had an ITR in the range of above five to 10; hardly 10 SMEs had a ratio of more than 10. This indicates that by and large SMEs have lower ITRs implying that there is enough scope to improve their inventory performance.

No	ITR value	Number of firms
1	0 to 2.5	20
2	>2.5 to 5	38
3	>5 to 7.5	15
4	>7.5 to 10	8
5	Above 10	10
Total		91

Table 8. "Distribution of ITRs of SMEs".

If ITRs of SMEs vary, it is essential to understand whether and how do they vary with kinds of IM practices pursued, among others. The variance of ITR of SMEs between different IM practices is presented in Table 9. It is significant to observe that those SMEs which did not pursue any IM practice had a lower ITR whereas those SMEs which pursued sophisticated IM practices had higher ITRs. This underlines the importance of the necessity for SMEs to adopt better IM practices as that is likely to enable them to improve their ITRs. To further substantiate the relationship between ITRs and IM practices, we did rank correlation analysis. The IM practices are ranked from one to six as in the previous case. The ITRs are ranked from 0 – 2.5 (5), >2.5 – 5 (4), >5 – 7.5 (3), >7.5 – 10 (2), and > 10 (1).

The statistically significant positive correlation between the two variables substantiates our inference that better the IM practice adopted by an SME, higher is its ITR.

IM Practices	ITR					
	0 – 2.5	>2.5 - 5	>5 – 7.5	>7.5 – 10	> 10	Total
No practice	17	3	1	1	0	22
Thumb rules	3	19	2	1	0	25
EOQ	0	3	4	2	1	10
ABC	0	8	5	4	3	20

Computerized IM	0	1	2	0	1	4
JIT/ VMI	0	4	1	0	5	10
Total	20	38	15	8	10	91

Table 9. "Inventory Practices and ITR".

Given the relationship between IM practice and ITR we are keen to understand how ITR varies with raw material ordering frequency. The relationship in terms of distribution of SMEs between raw material ordering frequencies and ITRs is presented in Table 10. It is understandable that those SMEs which resorted to less frequent raw material ordering had a lower ITR. On the other hand a significant proportion of those SMEs which resorted to more frequent raw material ordering particularly on a daily basis and on a weekly basis had ITRs ranging from 7.5 and above. Our correlation analysis further substantiated this positive relationship. The rank correlation coefficient was 0.401.

ITR	RM Ordering Frequency					
	Daily	Weekly	Fortnightly	Monthly	Quarterly	Total
0 – 2.5	2	8	8	2	0	20
> 2.5 – 5	4	11	11	12	0	38
> 5 – 7.5	0	6	1	8	0	15
> 7.5 – 10	2	2	2	0	2	8
> 10	4	5	1	0	0	10
Total	12	32	23	22	2	91

Table 10. "Raw Material Ordering Frequencies and ITR".

The next pertinent issue is whether ITR varies systematically between types of production of SMEs. Table 11 shows the distribution of SMEs in terms of types of production and ITRs. The table enables us to infer that those SMEs which have job shop production and batch production have lower ITRs whereas those which have mass production and flow shop production system have relatively high ITRs. Our rank correlation between types of production (job shop (1), batch production (2), mass production (3), flow shop (4)) and ITRs (0 - 2.5 (1), >2.5 - 5 (2), >5 – 7.5 (3), >7.5 – 10 (4), >10 (5)) brought out that there is a statistically significant, though lower, positive correlation (0.294) between the two variables.

ITR	Type of Production				
	Job shop	Batch Production	Mass Production	Flow Shop	Total
0 – 2.5	12	8	0	0	20
> 2.5 – 5	17	13	3	5	38
> 5 – 7.5	3	7	0	5	15
> 7.5 – 10	5	0	3	0	8
>10	1	0	4	5	10
Total	38	28	10	15	91

Table 11. "Type of Production and ITR".

Given the above we are keen to understand whether the size of SMEs has anything to do with the ITRs. Our analysis between size of enterprises (measured in terms of capital and labour respectively) and ITRs brought out that size has nothing to do with ITRs. Considering the above analysis it is important to understand the relationship between ITR and inventory cost per sales. Other things remaining the same, there has to be a negative relationship between the two variables implying that those SMEs which have lower inventory cost per sales are likely to have higher ITRs and vice versa. Table 12 presents the distribution of SMEs in terms of inventory cost per sales on the one hand and in terms of ITRs on the other. The table indicates that SMEs having lower inventory cost per sales tend to have high ITRs. The high statistically significant negative correlation (-0.638) supports this inference.

ITR	Inventory cost per sales					
	0 - 5	>5 - 10	>10 - 15	>15 - 20	> 20	Total
0 – 2.5	1	6	7	6	0	20
> 2.5 – 5	4	25	9	0	0	38
> 5 – 7.5	2	6	1	5	1	15
> 7.5 – 10	3	3	2	0	0	8
> 10	8	2	0	0	0	10
Total	18	42	19	11	1	91

Table 12. "ITR and Inventory Cost per Sale".

Variables	Correlation Coefficient
ITR and IM Practice	0.692**
ITR and Capital Investment	0.076
ITR and Labour	0.123
ITR and Raw Material Ordering Frequency	0.401**
ITR and Production Type	0.294**
ITR and Inventory Cost per Sales	-0.638**

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

Table 13. "Rank Correlation between ITR and Other Factors".

Given the above it is important to ascertain what factors determine the level of ITR in a SME. The possible factors could be (1) the sophistication of IM practice, (2) frequency of raw material ordering, (3) implementation level of modern manufacturing practices, and (4) inventory cost per sales. To ascertain whether these factors do really have an influence on ITR, we carried out a regression analysis as follows:

$ITR = b_0 + b_1\ inc + b_2\ D_{IM1} + b_3\ D_{IM2} + b_4\ D_{RF} + b_5\ D_{PT,}$ Where ITR = Inventory Turnover Ratio, b_0, b_1, b_2, b_3, b_4, b_5 are beta coefficients of the variables, D_{IM1} and D_{IM2} are dummy variables for IM practices, D_{RF} is the dummy variable for raw material purchase frequency, D_{PT} is the dummy variable for the production type respectively as explained in the previous analysis.

The results are given in Table 14. The model is statistically significant and it explains almost 38% of the variation in ITR. But IM practices based on thumb rule, EOQ, and ABC do not make any difference compared to SMEs which do not follow any IM practices. However, SMEs which pursue modern IM practice such as computerized IM, JIT/VMI are able to achieve higher ITR as reflected in the positive coefficient of the variable (though it is significant only at the 20% level). In addition both raw material ordering frequencies and production types have statistically significant positive influence on ITR.

SMEs	Machine Tool
$INV_{C/S}$	-0.371 (-3.556) [0.001]
D1M1	-0.003 (-0.029) [0.977]
DIM2	0.196 (1.279) [0.204]
DRF	0.168 (2.002) [0.048]
D PT	0.202 (1.597) [0.114]
Constant	6.092 (3.093) [0.003]
Adjusted R^2	0.377
F	11.871 (0.000)
N	91

Values within the parentheses and square brackets are 't' values and significance level

Table 14. "Regression Analysis of ITR with Inventory Cost per Sale, IM, Raw Material Ordering Frequency and Production Type (Dependent Variable: ITR)".

We are more particular about how IM practices and inventory cost per sales influence ITR. Therefore, we carried out a separate regression analysis as follows: $ITR = e_0 + e_1\ inc + e_2\ D_{IM1} + e_3\ D_{IM2}$, where $e_{0,}$ $e_{1,}$ $e_{2,}$ and e_3 are beta coefficients of the variables, D_{IM1} and D_{IM2} are dummy variables for sophistication of IM practices respectively. The results are presented in Table 15. The model is significant though the explanatory power has come down marginally. The dummy

variable representing SMEs which pursue thumb rules, EOQ, ABC based IM practices is not statistically significant. But the dummy variable representing SMEs which pursue computerized IM, JIT, VMI practices is statistically significant indicating its positive influence on ITR. Inventory cost per sales has a statistically significant negative influence. The overall analysis above bring out clearly that adopting superior IM practices is likely to enable SMEs to achieve a reduction in their inventory cost per sales and an increase in their ITRs.

SMEs	Machine Tool
$INV_{C/S}$	-0.389 (-3.636) [0.000]
D1M1	0.019 (0.157) [0.876]
DIM2	0.371 (3.108) [0.003]
Constant	7.772 (4.156) [0.000]
Adjusted R^2	0.341
F	16.547 (0.000)
N	91

Values within the parentheses and square brackets are 't' values and significance level

Table 15. "Regression Analysis of ITR with Inventory Cost per Sale and IM Practices (Dependent Variable: ITR)".

5.INFERENCES AND CONCLUSIONS

SMEs in inventory intensive manufacturing industries are likely to be aware of the need and importance of IM practices. Our study with reference to machine tools SMEs in Bangalore has indicated that these SMEs without exception are indeed aware of the importance of IM practices. However, when it comes to practice, almost one fourth of them did not pursue any kind of IM practice. This is primarily due to lack of motivation as well as lack of perception of immediate financial gains. Among the rest, 25 SMEs pursued IM practice based on thumb rules. Those who pursued EOQ/ABC accounted for about 30 whereas only 14 SMEs pursued modern IM practices such as computerized IM/ JIT/VMI. Thus modern IM practices are only confined to a minority even in the inventory intensive machine tools manufacturing industry. Our subsequent analysis brought out that those which pursued better IM practices also resorted to more frequent stock verification as well as raw material ordering.

Study brought out that two important dimensions of IM are inventory cost per sales and ITR. Those SMEs which could achieve better IM should be able to achieve lower inventory cost per sales as well as higher ITR. If that is so those SMEs which

pursue modern inventory practices should be able to achieve lower inventory cost per sales and higher ITR.

Our study brought out that this has indeed been the case in the context of machine tool SMEs. Our final analysis brought out clearly that better IM practices have a positive influence whereas inventory cost per sales has a negative influence on ITR. All these enable us to infer that it is appropriate to encourage SMEs to adopt better IM practices because that would enable them to achieve lower inventory cost per sales and higher ITRs.

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