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## A ROLE OF SUPPLY CHAIN MANAGEMENT IN REVIVAL OF SICK SMALL SCALE UNITS IN AHMEDNAGAR MIDC

(Savitribai Phule Pune University, Pune sponsored research project)

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### Abstract

Small scale units face multiple problems like unavailability of finance, lack of planning, over or under stock of materials, unskilled labour, no market for the products, credit sales, and high priced technical knowhow which makes the units inefficient in processes. These whole set of activities results into the sickness. In this paper, researcher has highlighted on the problems in the areas of logistics, demand forecasting, material resource planning, information technology, customer relationship management, production planning and control, outsourcing, material handling, purchasing and warehousing. The researcher has suggested steps that will help these units to improve their functioning and enhance productivity. The main focus of the study is to understand the role of supply chain in small scale units which helps in smooth functioning of the processes and reviving these units from sick units to profit making ones.

*Keywords: Supply chain, sickness, efficiency, productivity, logistics*

### Introduction

The area of operation of small scale units is generally restricted to the local area. The resources are limited and as a result these units are forced to limit its activities to the local area. These units are labour intensive and lack capital for running the business. The gestation period is less as compared to large scale units but actual realization becomes difficult in routine work because of improper guidance. Now a day the products are produced and consumed in different geographical area by some units. Also for some small scale units different parts of a product come from other states which make supply chain longer and more complex making it essential to redesign supply chain management, ignorance of which makes the unit sick.

A unit is considered to be sick when its financial strength dilutes and it becomes worse year after year. It incurs losses and its capital reserves may be stretched out in course of time. Small scale units are unable to pay the EMI's to the bank on the loan borrowed. The increasing trend in sickness is seen in all types of small scale units. The small-scale units are worst hit because of their unorganized structure and mismanagement. It is concluded that despite having qualifications, initial funds and backing by financial institutions, sickness is growing. Government has started schemes to rehabilitate the small scale units, which is not enough unless the units help themselves. Units should concentrate on the processes and must bring positive changes in it to increase profits and revive them. The symptoms of sickness should be traced at early stages because if sickness reaches an advanced stage, it is difficult and takes time to revive the unit.

Globalization has added fuel to this situation and increased competition multiple folds that traditionally was local. Small scale units are therefore forced to respond by making required improvements in their manufacturing practices and supply chains. These improvements are possible by sincere attempts to

focus on production activities, among others, on reduction of inventory, reduced lead times and improved logistics. Studies have shown that small scale units have longer supply chain and often involve longer order delivery lead times. To overcome such situations, small units should speed up the supply chain but many times further reduction of lead times are futile, especially when unit is exporting products to different countries and have involvement of international supply chains.

The current research is aimed at study of supply chains of small scale units and its possible roles in revival of sick units. Small scale units are struggling with constraints like finance, infrastructure, human resources, management knowledge etc. and find it very difficult to add supply chain into their set-up. They lack in skilled personnel having knowledge of supply chain. These results in a localised approach, with a focus on local efficiencies rather than on supply chain opportunities and better inventory management leading to higher total costs, lower overall efficiencies because of low volumes. In past few years firms are observing an increasing rate of globalization of the market and economy thereby also making supply chain more challenging. The problem becomes more acute after recession for the small scale units and became sicker. The study will draw attention to the need for evolving strategies for enhancing the performance of small scale units with respect to supply chain. There is need to develop a crop of potential entrepreneur leaders among the youth by incorporating supply chain education at all levels of the management education. Supply chain is related to all the disciplines of management and improvement in supply chain will help in improving all the areas of these units.

The current study is based on some assumptions and predefined premises considering the problems faced at different stages. The study is based on supply chain practices in small scale units and its benefits in turnaround (revival) of sick units, thus other aspects like finance, marketing, human resource etc., were not studied in detail. The study is conducted in Maharashtra Industrial Development Corporation of Ahmednagar district in Maharashtra. The study aims at listing the factors responsible for the sickness in terms of procurement, transportation, storing and issuing of raw material. Findings and conclusions are based on primary and secondary data collected through structured questionnaire, interviews of the owners and data available on the small scale units in different libraries, magazines, journals, annual reports and articles printed in daily newspapers. During the study it is observed that owners of small scale units were not willing to disclose the information about sickness of their units, thus names of the units are not mentioned anywhere in the report.

The primary objective of this study is to explain the sickness and causes thereof in small scale manufacturing units of Ahmednagar MIDC with particular reference to supply chain management and its role in their revival. The other objectives of the study are to analyze the various factors responsible for the sickness in terms of procurement, transportation, storing and issuing of raw material, to study the extent of sickness in small scale units and to study the present supply chain practices followed by small scale manufacturing units and suggest possible measures that may help them to revive.

Information related to the supply chain performance, sickness in these units and reasons for the same was collected from various libraries, newspapers, magazine, MIDC & MCCIA reports, journals published weekly, fortnightly or monthly by these units and the same is considered during preparation of the report. Various websites were surfed to find the reasons of sickness and supply chain management efforts required to improve performance of small scale units. To make the study more meaningful and objective oriented, available literature on small scale industries were reviewed. Moreover perceptions of owner managers, officials of financial institutions and government agencies including industry associations were contacted. In depth discussions were conducted to understand owner's observations for evolving the role of supply chain in revival of sick small scale units.

After refinement of the questionnaire, it is distributed to the sample respondents those are chosen from small scale units. The filled in questionnaires were thoroughly checked and processed through statistical tools for drawing out fair inferences, patterns, trends and conclusions. The primary data is

represented in tabular form which is further discussed, interpreted and analyzed. Interviews of all the respondents were also conducted through interview guide. Researcher had collected the minute details of all the aspects of the research topic at the time of the interview with this researcher had also used observation method which includes – *participative and non-participative observations*. The information was also collected regarding purchasing, logistics, outsourcing, warehousing, IT, forecasting, MRP, material handling equipments, PPC, etc. Observations has helped researcher to understand the way small scale units implement supply chains and many more information on ware house keeping, inventories and processes of these units. The recommendations are based on analysis of research findings and critical review of sick small scale units.

Supply chain can be answer to the problem faced by the units because it is the series of links between processes that exist between suppliers, units, and the customers which includes all activities from the purchase of raw materials to the delivery of finished goods to the end consumer. Raw materials are converted to finished goods, in turns several companies are linked together in this process, each adding value to the product as it moves ahead in the supply chain. If each step of the processes is planned well, cost can be reduced and profits are increased. Supply chain plays an important role in success of any organization because it helps in understanding and eliminating weak links that leads to failure of process.

In the current study the supply chain of firm is studied and various factors responsible for the sickness in terms of procurement, transportation, storing and issuing of raw material were noted and a better model of supply chain strategies was suggested to help small scale units to increase productivity, reduce losses and in terms revive them from sickness.

### **Profile of small scale units**

Profile of the units was studied and researcher suggested that these units must make more investment in employees i.e. an employee should be properly engaged, or else their performance cannot be improved. The units should analyze the drivers of culture across different levels of supply chain, including individual employee, functional teams, facilities and the organization, to understand the true sense of alignment of supply chain. Units should develop action plans to intentionally develop supply chain culture. Units should hire and train the right candidate to understand the supply chain and logistics to gain profits. Further units should create supply chain manager position responsible for studying deviations from planned strategies.

It is observed that these units are not aware of all the elements of supply chain and have poor supply chain management leading to higher cost, less revenue generation and blocking of working capital. In figure1, researcher has given all the elements of supply chain and tried to explain the importance of these elements in improving the supply chains of small scale units. All these areas are of great importance were units must work. These elements were studied and suggestions are given for each element in following pages.

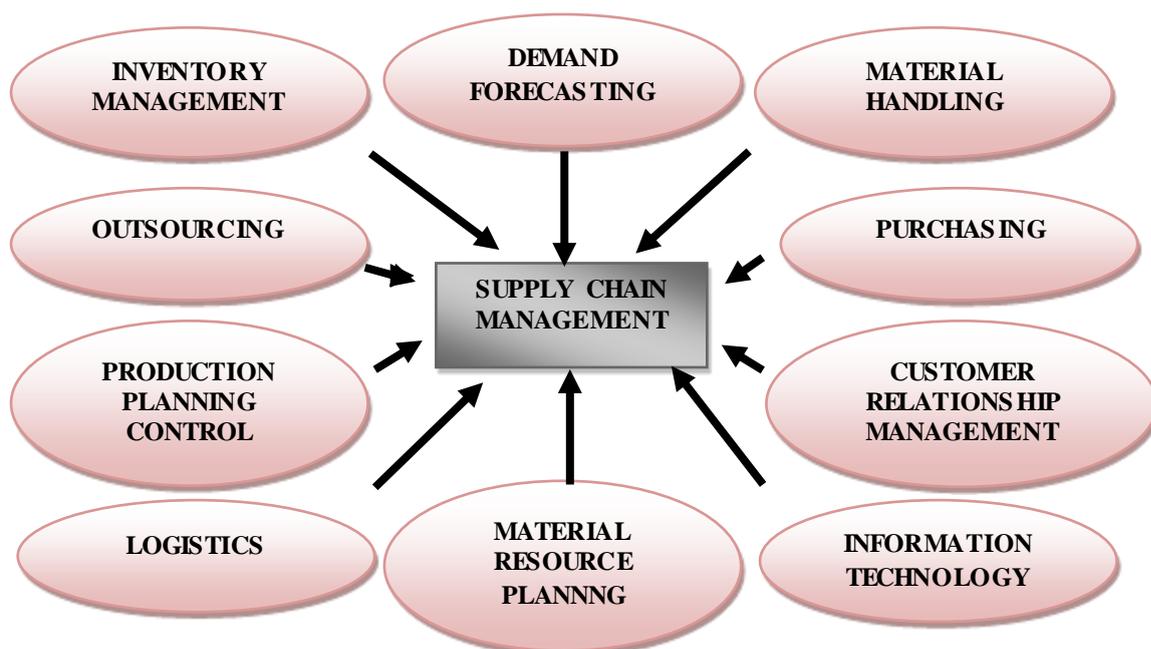


Figure 1- Supply chain model (Source- Primary data)

### Forecasting of demand

Demand forecasting is the key to improve supply chain performance and proper guidance to the small scale units will help in accurate forecasting in turns gain lower inventory with growth and serving customers with accuracy to view future demand. These units should develop forecasting tools that will help them focus on the inputs that matter for their business. Inventory is used as a buffer to meet customers demand and thus forecasting demand become more challenging, units often store inventory to protect against false forecasts. Many units have high level of slow moving inventory because of inefficient underperforming supply chain resulting from bad forecasting and late respond to market changes. This leads to high cost and lower growth of the small scale units.

| Table1-Forecasting of demand   |   |
|--|---|
| Need   | Achievement   |
| <ul style="list-style-type: none"> <li>➤ Understand the forces behind demand</li> <li>➤ Demand pattern and put inventory at right place</li> <li>➤ Bullwhip effect</li> <li>➤ Develop model</li> <li>➤ Study life cycle of product</li> <li>➤ Appropriate method of forecasting</li> </ul> | <ul style="list-style-type: none"> <li>• Lesser missed sales</li> <li>• Higher customer satisfaction</li> <li>• Less working capital</li> <li>• Avoid overstock</li> <li>• Lesser wastages</li> <li>• Cost reduction</li> </ul> |

Forecasting of demand for supply chain help in alignment and integrating data of forecasting, planning with data from inventory, transportation, planning & execution. Units generally should try to forecast demand with accuracy, which is difficult task but not impossible. All the units should use demand forecasting and the period for forecasting should be as short as possible.

### Material resource planning (MRP)

Material resource planning is major contributor to the supply chain management and is a process control system which ensures availability of materials for production with lowest possible stock in store and also helps in planning manufacturing activities, delivery schedules and procurement activities.

| Table2- Material resource planning (MRP)  |  |
|---|--|
| Need  | Achievement  |
| <ul style="list-style-type: none"> <li>➤ Purchasing of material</li> <li>➤ Demand pattern and put inventory at right place</li> <li>➤ Bullwhip effect</li> <li>➤ Develop model</li> </ul> | <ul style="list-style-type: none"> <li>• Reduced cost</li> <li>• Less stock outs</li> <li>• Control over lead time</li> <li>• Scheduling</li> <li>• Maintain the records</li> <li>• Integrity of the information</li> <li>• No missing or extra ordering of inventory</li> <li>• No delay in deliveries</li> </ul> |

MRP system is difficult to use and expensive thus units must evaluate the benefits of this system. Some of the benefits should be low levels of in-process inventory, tracking of the component needed, and evaluation of the capacity requirements as per schedule.

### Make or outsource decision

Researcher observed that units not outsourcing spend major time in producing goods and very few time is spend on tactical planning and these units has a misconception that they cannot outsource because they are small scale units.

| Table3-Make or outsource decision   |   |
|---|---|
| Need  | Achievement   |
| <ul style="list-style-type: none"> <li>➤ Appoint consultant</li> <li>➤ Study requirement</li> <li>➤ Reliable supplier</li> <li>➤ Outsource one or non-tactical process</li> </ul> | <ul style="list-style-type: none"> <li>• More focus on core processes</li> <li>• Planning and strategic improvements</li> <li>• Better management</li> <li>• Improved skills</li> <li>• Lowers investment and releases working capital</li> <li>• Reduces skilled labour requirement</li> </ul> |

Units should consider the reasons in favour of outsourcing alongside the associated risks and arrive at a decision to outsource a process. Many companies are familiar with outsourcing IT part but they lack an understanding that all the processes of the business can be outsourced. Units can outsource process by understanding their organizational goals, making a plan, selecting a vendor, improving relationship with him, explaining the need clearly, and control the process.

### Purchasing

Units are habitual to purchase as and when required or blind orders are placed increasing stock and cost of purchasing and also require large space to store which can be avoided by being more planned while purchasing.

| Table 4- Purchasing  |  |
|--|--|
| Need   | Achievement  |
| <ul style="list-style-type: none"> <li>➤ Use of EOQ, Kanban</li> <li>➤ Internet or trade shows for searching vendors</li> <li>➤ Scientific procurement</li> <li>➤ Credit purchase facility</li> <li>➤ Automate purchasing process</li> <li>➤ Innovative ideas</li> </ul> | <ul style="list-style-type: none"> <li>• Quality material</li> <li>• Best price</li> <li>• Reduce overall cost</li> <li>• Right time delivery</li> </ul> |

While using data it should be converted to information and must act on it by developing formalized data strategy with the end supply chain goals in mind and care should be taken on sensitive points.

### Logistics for raw material and finished goods

Raw material being blood of production must be planned carefully because its logistic is non value adding process but at the same time incurs cost. The logistics of raw material usually involves the coordination between information, material handling, production, packaging, inventory, transportation and warehousing.

| Table 5- Logistics   |  |
|--|--|
| Need   | Achievement  |
| <ul style="list-style-type: none"> <li>➤ Proper scheduling and tracking</li> <li>➤ look for low cost logistics</li> <li>➤ Security of the product</li> <li>➤ Use 3PL and 4PL</li> <li>➤ Possibility of pooling of transportation</li> <li>➤ Planning and analysis</li> </ul> | <ul style="list-style-type: none"> <li>• Cost saving by avoiding warehouses</li> <li>• Avoid overstock</li> <li>• Lesser wastages</li> </ul> |

Small scale units need to look into their setup and understand the complexity to decide the logistics. These units should study the tradeoffs between inventory price and transportation cost, carrying cost and sales lost because of unavailability. This will help them to know the position of warehouses and its size.

### Handling of materials

Material Handling is concerned with the movement, storage, control and protection of materials throughout the processes of manufacturing, distribution, and consumption of goods.

| Table 6- Material handling  |   |
|---|---|
| Need  | Achievement   |
| <ul style="list-style-type: none"> <li>➤ Reposition plant layout</li> <li>➤ Flexibility</li> <li>➤ Study of Material movements</li> </ul> | <ul style="list-style-type: none"> <li>• Reduces unnecessary travelling/handling</li> <li>• Low cost and high performance</li> <li>• Time saving</li> </ul> |

Small scale units must understand that movement of material does add cost to the product but not value, thus unnecessary movements must be avoided.

### Management of inventory

Inventory management is an important element of supply chain management. Inventory means capital invested in raw material and products on the shelves. Small scale units keep more than what they need to cover their production requirement and to keep a safety stock, losing opportunities to invest this capital making loss of potential profits. But if these units keep less than required inventory, they will not

be able to deliver the orders to customers making loss to the units. This calls for the understanding the need for the calculation of inventory required.

| Table 7- Inventory management   |   |
|---|---|
| Need  | Achievement   |
| <ul style="list-style-type: none"> <li>➤ Pull system</li> <li>➤ Use of ABC, XYZ method</li> </ul> | <ul style="list-style-type: none"> <li>• Less working capital</li> <li>• Save cost</li> <li>• Avoid obsolete stock</li> </ul> |

Proper inventory control will help these units to save over extra cost on urgent order to purchase material or order loss because of non-availability of material.

### Production planning and control (PPC)

Production planning and control manages low productivity, inventory management and resource utilization. Layout helps in smooth production of the goods and also improves the productivity of the unit. It is observed that majority of the small scale units use process layout and few uses product layout. Small scale units should analyze their product ranges and flexible layout should be implemented which is mix of both product and process layout.

| Table 8- Production planning and control (PPC)   |  |
|--|--|
| Need   | Achievement  |
| <ul style="list-style-type: none"> <li>➤ Forecasting and planning</li> <li>➤ Flexible layout</li> <li>➤ Demand pattern</li> <li>➤ Resource management</li> </ul> | <ul style="list-style-type: none"> <li>• Resource utilization</li> <li>• Improves productivity</li> <li>• Avoid overstock</li> <li>• Lesser wastages</li> <li>• Timely delivery</li> </ul> |

These units require a proper planning and control method to be adopted, so that proper resource utilization can be achieved with improved output and timely delivery to satisfy the customer and retain their loyalty.

### Information technology (IT)

IT in supply chain can bring revolution in small scale unit’s productivity and revive them from sickness if properly implemented. Units must use IT for development and maintenance of supply chain. Software related to supply chain is available in the market which includes the system and application program used for updating transactions, decision-making and strategic supply chains. Software for computing freight costs, transportation mode rates, cost and service effectiveness of carrier is available.

| Table 9- Information technology (IT)  |  |
|---|--|
| Need  | Achievement  |
| <ul style="list-style-type: none"> <li>➤ Software for computing</li> <li>➤ ERP</li> </ul> | <ul style="list-style-type: none"> <li>• Reduced manual work</li> <li>• Cost saving</li> <li>• Improve the information process</li> <li>• Better customer service</li> <li>• Increase in productivity</li> <li>• Timely delivery</li> <li>• Inventory control</li> <li>• Tracking and expediting orders</li> </ul> |

Small scale units are facing sickness problem where they are lacking the ability to face competition from outer world because of advancement of technology and growing expectations of customers. These units have to come out of their protective zone and must work on the strategic and technological innovations in processes for which they require vision, strong planning and insight into the internet usage

capabilities for better supply chain management and ultimately improved competitiveness. Small scale units must realize that understanding the power of technology to collaborate with their business partners will make them successful. Supply chain application with the internet and other networking links to record performance and past trends will make them understand how much product should be made with cost effective methods.

### Customer relationship management (CRM)

Supply chain strategies enable small scale units to ensure that they have required materials, information and financial resources needed to produce quality goods and services demanded by customers. Supply chain management coordinates the flow of work from vendors/sellers to these units and then from these units to distributors to retailers, and reduces inventory and ensure product availability when required. Customer relationship management can be used to ensure that product and service reaches to customers when needed and feedback is collected form unsatisfied customers to make necessary changes or improvements. Supply chain management and customer relationship management functions can maximize profitability of the small scale units and will help them to review.

| Table 10- Customer relationship management (CRM)  |   |
|---|---|
| Need  | Achievement   |
| <ul style="list-style-type: none"> <li>➤ Feedback collection</li> <li>➤ Statistical tool</li> </ul> | <ul style="list-style-type: none"> <li>• Customer requirement</li> <li>• Better customer service</li> <li>• Necessary changes</li> <li>• Timely delivery</li> </ul> |

It is observed that small scale units collects customers feedback form questionnaire method but does not analyze it. Units should apply some statistical tool to analyze collected data, so that findings can be studied and required action may be taken to improve the performance. CRM helps units to know their customers means knowing who their customers are, what their needs are, and the means by which units communicate with customers.

### Designing of a network

Small scale units should map their existing supply chain network that will help identify, isolate and address existing risks. Proper strategies will safe guard external and internal factors including natural and non-natural factors that may impact the supply chain and allows small scale units to proactively work on minimizing risk.

### Supply chain strategy for turnaround & performance measurement

Researcher believes that slight changes or improvements in supply chain of small scale units will help them to revive from situation of sickness. Units should reduce inventory and logistic expenses to reduce overall cost. Moreover to generate revenue and increase profitability units should tap higher market share, work on back orders and lost sales, attract new markets, and selling higher margin products in chronological order.

Researcher suggests that operational efficiency can be improved by reducing procurement expenses and increasing assents utilization also working capital being blood for any business and should be released by reducing inventory and reducing accounts receivables and credit buying of materials. Small scale units should reduce raw material, work in progress and finished goods to its lowest limit and this limit will differ from unit to unit depending on type of production. These units should develop alternative sources of supply to reduce cost of purchases.

### General suggestions

Small scale units should develop a report card for supply chain performance and each detail, improvements and weaknesses must be mentioned in it. The report card will help these units updated and maintain the general requirements. Small scale units should come out of their comfort zones and must work on weaknesses in the process and supply chain to boost their performances in the competitive market. During the study period researcher felt the need for investing time and efforts to up front the supply chain using predefined principles and practices by similar types of units. In developing the blue print of the future course of action that maps linkages between initiatives and an implementation, these units must scale their resource limitations and determine the gap between current practices and best practices.

Cost/benefit analysis is essential for prioritizing the sequence of initiatives, calculating capital and people requirements, and studying a complete financial picture of the small scale unit's supply chain at all stages of implementation. During the analysis the goals for costs and asset utilization, especially working capital is essential to success. More efforts towards cost cutting and improve asset utilization may have limited success thus supply chain strategy will create revenue growth. The restructuring of supply chain in small scale units seems to be very difficult with financial impact on the balance sheet and the income statement and this will not pay off overnight, owners must carefully balance its long-term goals against more immediate business needs. Plan the work well before implementing which will keep these small units focused and committed to realizing the benefits. People resist change, because people in small units have problems coping with the uncertainty of change, but this fact of change must be understood and acceptable to all the member of these units. The best way for ensuring success and reducing resistance to supply chain is visible participation and clear communication by the owners or managers. Further the small scale units should keep supply chain activity centralized and not scattered, this will help in proper control and make last moment changes in plan possible. If the units are able to integrate their activities across the supply chain, good asset utilization, cost reduction, and price advantages will help attract and retain customers and thus enhance to earn more profits. Small scale units should invest in low cost software which is easy to operate and will reduce the overall cost by minimum 10 percent.

Units have to think of future regarding re-work of their supply chains to profitably serve the customers. Supply chain will definitely help these small scale units to enhance both customer satisfaction and profitability and help sick units to revive. Units should understand the demand pattern of the raw material as well as product because demand is the basis of all supply chain planning. Then units should improve their supply chain and carefully reduce the inventories to free up the working capital which will help these units for revival. All the units should be prepared for bad time making them strong and sustainable for long time by focusing on cutting costs, reducing capacities by outsourcing, limiting suppliers, and freeing up cash by taking out inventory. In her thesis, Deepali, H. P. (2013) listed factors of sickness as poor top management decisions, cost pressures, or demand hit by poor customer service and blockage of working capital. Most difficult part of the supply chain management faced by small scale units is identifying true demand by using reliable information by communicating with the customers frequently because procurement departments themselves had no visibility regarding raw materials requirements.

Small scale units should study the overall situation and reasons for sickness so that strategy can be finalized to reduce uncertainty. It is suggested that proper supply chain plays crucial role in revival of small scale units from sickness. Researcher has presented revival model for small scale units from Ahmednagar MIDC, shown in figure 2. In this model four major elements responsible for sickness are considered. These elements are problem in cost control, less revenue and profitability, low operational efficiency, and unavailability of working capital.

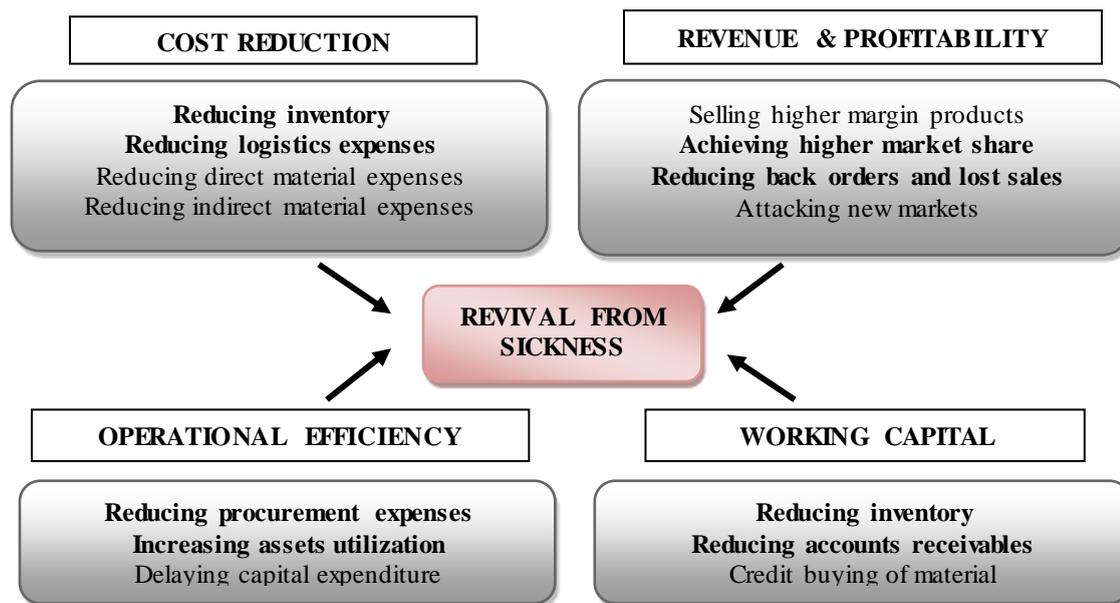


Figure 2- Revival from sickness model (Primary data)

To reduce overall cost of production these units should reduce inventory in all the forms present in the plant viz. raw material, work in progress and finished product. During study it was also observed that logistic expenses are high leading to higher cost. If such expenses are reduced by pooling of logistics activities with similar type of small units and planning for future logistics that may help sick units to cut cost on logistics.

Sickness of small scale units can also be reduced by increasing revenue and profitability which is possible only if these units start selling higher margin products, achieving higher market share by taking strategic steps to reduce back orders and lost sales and entering into new markets. Further it is suggested by researcher that operational efficiency of these units must improve which is possible by reducing procurement expenses, increasing assets utilization, and delaying capital expenditure. Most important element or factor of sickness of small scale unit is unavailability of working capital which is also called as life blood of these units needed to take care of daily expenses. Working capital is blocked in inventories, account receivables from customers. Units should also look for credit buying of raw materials which will postpone use of working capital.

In figure 3, different processes of small scale units are listed in which these units can implement information technology.

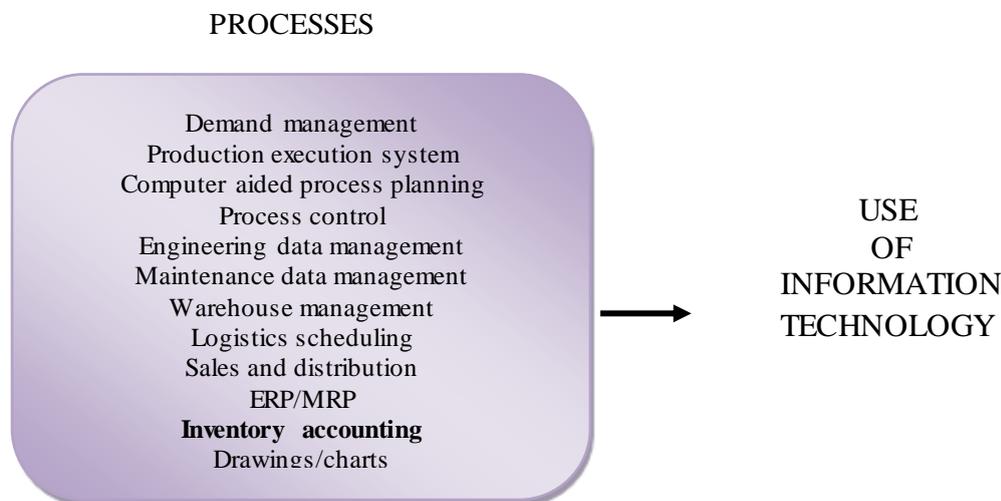


Figure 3- Information technology in small scale units (Primary data)

During study it is observed that majority of the units implement IT for *inventory accounting* and some units use it for *sales and distribution*. It is also observed that very few units implement IT in demand forecasting, production execution system, computer aided process planning, engineering data management, maintenance data management, warehouse management, ERP/MRP, and drawings/charts. None of the small scale units utilize information technology for process control and logistics scheduling which is most important process of any manufacturing unit. It is suggestive that if all the units initiate IT use in above mentioned field, the control over processes will increase and improve productivity with good quality product. Such initiations help the small scale units to retain customers and attract new customers earning more profits and revive them from sickness.

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