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A Study of Internal Failure Costs on the Financial Problems of Micro Enterprises

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ABSTRACT

The SME sector comprises of many manufacturing, trading firms. The enterprises which are into manufacturing are involved the manufacture of engineering products, chemicals, food products, leather, plastic and others. There are various problems which are faced by the Micro, Small, Medium . These problems relate to finance, labor, marketing and other problems. In the light of Make in India policy it is appropriate to study the problems. It is important to study the effect of internal failure costs on the financial problems of the Micro, Small and Medium Scale enterprises sector. The paper studies this aspect with the help of a survey.
The study tries to understand internal failure costs related to Micro units.

Keywords: Internal Failure costs, Financial Problems, Micro, Small and Medium Scale enterprises.

INTRODUCTION:

The Micro, Small and Medium Scale enterprises sector comprises of many manufacturing, trading firms. The enterprises which are into manufacturing are involved the manufacture of engineering products, chemicals, food products, leather, plastic and others. The manufacturing enterprises are into manufacture of automobile spares, tools, and other spares and parts required by the large manufacturing houses. There are other types of industries as well, such as service rendering and those into manufacture of food products, chemicals, readymade garments etc. thus there are businesses ranging from manufacturers of spare parts to service rendering concerns.
In the SME sector there are manufacturing enterprises which do not have a product of their own but they manufacture products such as engineering spare parts based on the specifications of the clients. The manufacturers are known as Subcontractors. There are various problems which are faced by the Micro, Small,Medium . These problems relate to finance, labor, marketing and other problems.
Micro, Small and Medium Scale enterprises (MSME) have tremendously developed in the last few decades. They are also known as Small Scale Industries (SSI) or Small and Medium Enterprises (SME). They have been providing goods and services, and also providing employment opportunities for thousands of people. They are viewed as growth engines. These units exist in the form of factories, workshops, trading and service organizations.
The Micro, Small and Medium Scale enterprises (MSME) in India can be categorized as follows:

A] Micro
B] Small
C] Medium

The classification is given by the Micro, Small and Medium Scale Industries Act 2007 is as follows:

- Micro Industries are less than Rs 25 Lakhs in Investment
- Small Industries are between Rs 25 lakhs and Rs 1 Crore in Investment

- Medium Industries between Rs 1 Crore and Rs 5 Crores in Investment

Small Scale Industries exists in the form of factories, workshops, trading and service organizations. A section of SSI units are known as Machinists or sub contractor or job workers.

A machinist or a sub contractor is a person who uses machine tools to make or modify parts primarily metal parts. This is accomplished by using machine tools to cut away excess material, much as a wood carver cuts away wood to produce his work. The machinist does this cutting operation in order to produce a part that confirms to a set of specifications which are usually in the form of engineering drawings commonly known as blueprints. A machinist is to metal what is carpenter to wood. The present study is based on Machinists or Sub contractors or job workers.

The job workers, sub contractors, or machinist have to manufacture the product according to the specifications given by the client. If the job workers, sub contractors, or machinist does not manufacture according to the blueprint or the given specifications the material gets rejected.

Quality is based on the perceptions of the individuals as they have different perceptions on products and services. Quality is a complex phenomenon. There are many definitions of Quality, few are as follows:

"Quality is conformance to specifications". British Defence Industries quality Assurance Panel.

" Quality is conformance to requirement ." Philip Crosby.

" Quality is fitness for purpose". Dr. Juran.

"Quality is a predictable degree of uniformity and dependability, at low cost and suited to the market" Dr Edward Deming.

Quality Costs are the costs associated with preventing, finding and correcting defective work. These costs can be reduced or controlled. The cost of quality or as some authors call it cost of poor quality are also referred to as failure costs. Largely various authors have classified Quality costs as follows:

1. Price of conformance: these are prevention and appraisal costs
2. Price of Non-conformance: Failure costs

Prevention and Appraisal costs are also referred to as control costs. Failure costs can be classified as Internal Failure costs and External Failure costs.

a. Prevention Costs: these costs are incurred to ensure that errors, defectives, rejections, spoilages do not take place. Prevention costs include costs relating to education and training of laborers, continous improvement efforts, process control, testing and preventive maintenance.
b. Appraisal Costs: These costs costs of verifying,checking and evaluating at various stages of manufacturing. Appraisal costs include costs relating to inspection, inventory counts, supplier evaluation.
c. Internal Failure Costs: these costs are incurred because of failures that are found before the product or services reaches the customer. Such as scrap, rework, repair, overtime due to nonconforming products and services.
d. External Failure Costs: These costs are the costs which are incurred when the customer finds failure or non conformity with the products. These costs related to replacement of the product.

LITERATURE REVIEW:

An article tracks that the Cost Of Quality approach is not utilized in quality management. The survey says that wherever it is implemented, the performance appraisal failure approach is followed. The survey says that wherever the CoQ is there the quality costs are reduced to a large extent.(Andrea Schiffaurea and Vince Thomson, 2006.)

A study identifies the factors and measures that contribute towards the successful implementation of quality cost program. It shows the cause and effect relation of the difficulties that are faced by the industries. Factors that are responsible for the successful implementation of quality cost program are management support, effective application. (Dr Suhansa Rodchua October 2006.)

The another article describes that financial benefits can be derived from revenue expansion, cost reduction and both simultaneously. The paper studies the revenue emphasis, cost emphasis and dual emphasis. (Roland T. Rust et el October 2002.)

A paper gives details on the strategies of small, medium and large scale organizations and compares them. The article throws light on pressures, constraints,investment priorities. It talks about cost and quality strategies of the organizations. It indentifies cost,quality and delivery time are the main pressures on the Indian Industries. (Singh, Rajesh kr,2007)A paper indentifies that in today's tough competition TQM is minimum requirement staying in the game. Quality can be achieved by continuous improvement. Quality costs should be accounted for and reported. (Denisia Gheorghina,,2008.)

Defective products are delivered from production process. The defective products are required to be repaired or

sold at lower prices. It also causes customer satisfaction. Spoilages also have impact on the profitability. For the SME sector in Indonesia the profits are already low and such defectives and spoilages aggravate the situation. (Hamfri Djajadikerta, 2006). A research papers studies the awareness of productivity amongst the SSI units in Vishakhapatnam District of Andhra Pradesh. The survey reveals that majority of the SSI Units are not aware of productivity and its benefits. Hence they do not take steps in increase the productivity. They need to control defects and rejects. In this era of tough competition and globalization the study observes that better quality products must reach the customers. (N. Rajyalakshmi 2004.)

Another paper talks about industrial sickness of SSI units. It studies the factors responsible for the mortality. Some of the reasons indentified are lack of skilled labor, obsolescence of technology, lack of entrepreneur development, lack of skill and non availability of working capital. (K.V.Ramana Reddy and Maddileti,2004.)

A survey describes that quality costs are tools of benchmarking and are important in tough competitive environment of today. The study shows the correlation between the various failure costs and the cost of conformance. (S.B.Jaju et al, 2008.)

An article questions in the beginning whether quality costs and zero defects contradictory, but later confirms that quality is not stable but a continuous process. The article says that kaizen is more useful in increasing quality. Continuous Improvement can lead to reduction in scrap but once the improvement is abandoned the reduction in scrap stops leading to quality costs. (Arthur M Schneiderman 1986).

Small Scale industries face tough competition. The survival of such units is tough. Hence Kaizen implementation can impact such units positively. In a study processing time was reduced by 44.4 percent and an amount of Rs. 64,000 was saved by recovering a total of 80 square feet working area. There were improvements in the form of work flow.(Amit Kumar Arya Sanjiv Kumar Jain, (2014)

A study revealed that there is a significant portion of hidden quality costs which may be termed an “opportunity loss”. The findings revealed that the company’s total quality costs actually far exceed its current profit. The company can improve its competitive position if it focused on the elimination of these quality costs. The findings support the contention that tracking of poor quality costs is an important step in the quality management process. (Soo-Jin Cheah Amirul ShahMd. Shahbudin FauziahMd. Taib, (2011)

The Costs of quality in a small-scale industry in India in the financial year 2006-2007, were calculated . A quality cost program was implemented in that organization and more resources were allocated for prevention and appraisal cost activities at the start of the financial year 2007-2008. Then, the costs of quality related to the financial year 2007-2008 and

2008-2009 were compared. Co-relation co-efficient between the different quality cost categories was calculated,based on the quality cost data of three years,. The co-relation co-efficient between different quality cost categories indicate that by increasing the efforts towards prevention and appraisal activities, costs of non conformance decrease.

There is a positive co-relation within costs of conformance and between costs of non conformance.(Arvind Chopra Dixit Garg, (2011)

Implementation of techniques like Kaizen has shown tremendous impacts on the production techniques and lead times. A large number of small-scale industries exist in India. It is difficult for small industries to survive due to tough competition among them. All the small scale industries are facing problems like low production and poor-quality products. If kaizen techniques are implemented then the inventory access time is reduced up to 87 per cent and total distance travelled and total time taken by product is reduced up to 43.75 and 46.08 per cent, respectively. (Amit Kumar Arya Suraj Choudhary, (2015)

A study for small scale industries related to the automobile industries revealed that

total Failure Costs has a direct positive correlation with Total Quality Costs and it also increases with time. The study further revealed that Total Failure Costs is inversely proportional with preventive costs and Appraisal costs. Preventive costs and Appraisal costs act as independent costs, and Total Failure Costs is a dependent or secondary quality cost. If the Preventive costs and Appraisal are strategically allocated in advance by using statistical advanced tools, then internal failure costs and external failure costs will diminish considerably. Arvind Chopra Bikram Jit Singh, (2015)

Lean manufacturing emphasizes on the methodologies and approaches that can help an

enterprise to reduce the waste factors in its processes considerably. Some studies have proved that the capability of Activity Based Costing in providing valuable cost information for Lean Manufacturing implementation due to its activity-oriented nature. A particular study is shows the advantages of Activity Based Costing in controlling the Cost Of Quality by using a novel System dynamics modeling methodology. Amir H. Khataie Akif A. Bulgak, (2013)

The study was conducted on 500 Turkish manufacturing companies.
A study was conducted to investigate the extent to which Turkish manufacturing companies implement a cost of quality (COQ) system. The study also evaluated how company performance changed after cost of quality system implementation, and identified the objectives behind cost of quality measuring and reporting. The findings indicated that almost half (49.5 percent) of responding firms had implemented a cost of quality system. After cost of quality system implementation, some remarkable changes were observed in business operations of the responding companies such as decrease in customer complaints; decrease in rework and scrap; decrease in warranty expenditures; decrease in failure costs decreased; and increase in sales volume.
The most important three objectives behind cost of quality measuring and reporting were overall quality improvement; setting cost reduction targets and measuring progress; and improving control of quality activities. (Ali Uyar, (2008)
Based on the review of literature the objectives, hypothesis was formulated.

OBJECTIVES:

1. To Study the Impact of Internal Failure costs of quality on other financial aspects such as profitability
2. To study whether reworks and rejections increase the total cost resulting in low profitability.

HYPOTHESIS:

1. Internal Failure costs add to the already existing financial problems of the micro industries.
2. Reworks, material rejections increase the total costs resulting in low profitability.

LIMITATIONS OF THE RESEARCH:

1. The study covers Micro in and around Pune City.
2. The study covers Subcontractors who are also known as Machinists or Job workers.
3. The research is based on data collected.

RESEARCH METHODOLOGY:

A survey of micro units was conducted in the Pimpri Chinchwad suburbs of Pune City. The Pimpri Chinchwad area is the industrial area of the city of Pune. Big companies as well micro small and medium industries exists in the Pimpri Chinchwad industrial zone
For the purpose of the present research, primary data is used. Primary data was collected using a questionnaire. A structured questionnaire having 32 questions was prepared. Both closed and open ended questions were prepared for the purpose. The respondents were proprietors.
For secondary data books, research journals were used.
For the purpose of the research random sampling technique was used.
A questionnaire was administered to 75 micro units. Likert scale was used for the questionnaire. These are those units which perform machining, tooling and job work.
Chi square test was used to test the hypothesis.

Hypothesis Testing:
Internal Failure costs add to the already existing financial problems of the micro industries.
HO: Internal Failure costs does not significantly add to the already existing financial problems of the micro industries
H1: Internal Failure costs does significantly add to the already existing financial problems of the micro industries

Fig. 1

N	Mean	Std. Deviation	Minimum	Maximum
75	5.0400	1.54605	1.00	7.00

Fig. 2

Test Statistics	
Chi-Square	33.360[a]
df	6
Asymp. Sig.	.000

Here the Mean is equal to 5.04 which is more than the value 4. On an average the respondents have agreed to the statement.
Also the P-value is .000 which is less than 0.05 thus H0 is rejected and H1 is accepted.
Thus proving the hypothesis Internal Failure costs add to the already existing financial problems of the micro industries. Internal failure are incurred because of failures that are found before the product or services reaches the customer. Such as scrap, rework, repair, overtime due to nonconforming products and services
Reworks, material rejections increase the total costs resulting in low profitability
H0: Reworks, material rejections does not significantly increase the total costs resulting in low profitability
H1: Reworks, material rejections does significantly increase the total costs resulting in low profitability

Fig 3

Descriptive Statistics				
N	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**
75	5.2000	1.27343	1.00	7.00

Fig 4

Chi-Square	22.800b
df	4
Asymp. Sig.	.000

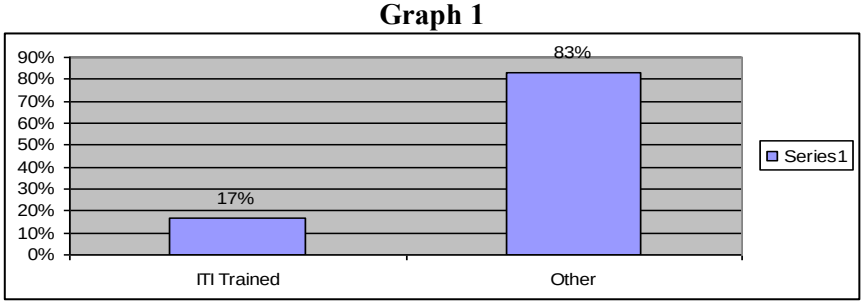
Here the Mean is equal to 5.20 which is more than the value 4. On an average the respondents have agreed to the statement.
Also the P-value is .000 which is less than 0.05 thus H0 is rejected and H1 is accepted.
The reworks and repairs which have to be done decrease the profitability of the company.

Other findings:
The respondents were asked to list the financial problems they face, the common financial problems identified were low profitability, liquidity or working capital related problems. Low profitability was described that due to higher manufacturing costs, the profitability is low. Some respondents described that the customers pay them late resulting in lower profits and liquidity working capital related problems. Hence when rejections take place the profitability decreases. Sometimes penalties are levied on them resulting in additional costs.
The respondents who were interviewed for the purpose of the research do tool job work, machining. They work with raw materials such as metals like steel, cast iron, and plastic. They work with material i.e. by purchasing raw material themselves or without material i.e. they receive raw material from the parties placing the orders with them, i.e. their clients.
It was observed that 17% of the respondents employ I.T.I trained workers, whereas 83% respondents have workers who are not I.T.I trained. These 83% workers are either unskilled, semi skilled, or those who are not I.T.I graduates but are skilled. These so called skilled workers have acquired their skills by experience or are trained by industries. Some workers are not even literate and cannot read instructions.

Types of Workers Employed

ITI Trained	17%
Other	83%

Graph 1



The material rejections which take place are due to Damages and Spoilages. According to the industry jargon Damages are "rework" material rejections as they can be reworked or rectified. On the other hand Spoilages are known as non rework material rejections as they cannot be reworked or rectified. All the respondents have either damages or spoilages or both. 88% of the respondents say that damages take place, whereas 17% of the respondents said that both take place.

The respondents said that there are more than one reasons for the material rejection taking place. The reasons for the material rejections were found as follows:

1) Sub Standard Material
2) Unskilled Labor
3) Inappropriate Production methods
4) Old tools and equipments

Sub standard material means for cost cutting cheap quality raw material is used or is supplied by the clients. 41% respondents said that substandard material is one of the causes for the material rejections. 88% of the respondents identified labour as the reason for the damages and spoilages. According to the industry jargon Damages are "rework" material rejections as they can be reworked or rectified. On the other hand Spoilages are known as non rework material rejections as they cannot be reworked or rectified. Non availability of skilled labour, carelessness on the part of the labour, negligence where some of the specific reasons identified.

50% of the respondents believed that faulty production methods are the reasons. These respondents said that they had old machines and equipments. And they cannot afford to buy new ones as these are costly.. 33% of the respondents said that do nothing regarding the rejections. They take no action, whereas 67% said that they do try to train their workers, try to improve their systems, machines, and production methods but still the rejections take place. They inspect the material during production.

CONCLUSION:

Micro industries face different types of problems such as financial problems, Labour problems, material procurement problems.

To sum up it is proved that Internal Failure costs add to the already existing financial problems of the micro industries and Reworks, material rejections increase the total costs resulting in low profitability. The reasons for the material rejections are Sub Standard Material, Unskilled Labor, old Production methods and old equipment and Tools.

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