

Productivity In Large Paper Mills

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INTRODUCTION

Pulp and Paper Mills especially the old ones with multiple units are passing through a very difficult phase. Costs of inputs, fuelled by inflationary pressure, have increased rapidly. Such increases push even economically viable units into the red in a short span of time, unless timely, positive steps are taken to face such challenges. The costs of input (controlled by the environment) are largely beyond the control of the management of a unit. To offset such increases to the extent possible the management has to be continuously alert to identify the possible areas of economy, and make plans to achieve them and then implement these plans. The management has the responsibility of keeping the unit economically viable and competitive by improving the technology and productivity and diversifying into other fields on a continuing basis.

Productivity

Two well known methods of improving productivity are :

- (a) increase in production quantity with the same quantity of inputs, and
- (b) decrease in the quantity of input for the same quantity of production.

A third important dimension of improved productivity in a quality conscious environment is improvement in the product quality increasing the realization at the same or reduced cost of input.

Putting the same thing differently it can be said that the overall productivity of any industry is a combination of the productivities of different inputs, such as manpower, materials, machines, and money and the realization value of the output.

Productivity Measures

A rough anatomy of the cost of manufacture of paper in a large integrated pulp and paper mill may look something like the following :

(a) Raw Materials	30%
(b) Pulping & Sizing Chemicals	20%
(c) Power & Fuel	20%
(d) Labour & overheads	20%
(e) Stores & Spares	6%
(f) Miscellaneous	4%
Total :	100%

This is only a very rough indicator. The manufacturing cost structure, varies perceptibly from mill to mill, because of varying degrees of cost effectiveness and productivity achieved by different mills in different areas and different environmental conditions. There cannot be a thumb rule approach of improving the productivity of different paper mills, but the approach has to be tailored for each unit on the basis of its cost analysis.

One approach is to identify the cost areas. Make an ABC analysis of the different cost items, select high cost items and subject these items to further analysis and studies like judicious inter-firm comparisons. Such an approach will enable the management to locate areas in which priority efforts have to be put to improve productivity and reduce costs.

Simultaneously the costs of men, materials, and money have to be quantified. These costs should thereafter be subject to further studies and analysis to select the areas for improving their productivities.

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Broadly, the following areas are considered vital for putting efforts to have major impact on the economy of a Pulp & Paper Industry.

- * Capacity Utilisation
- * Energy Consumption
- * Labour Productivity
- * Yield of fibrous raw materials
- * Modernization of plants and processes and mechanisation of material handling
- * Materials Management
- * Forest Management

Capacity Utilisation

Large Paper Mills are capital intensive and many of the old mills in India are labour intensive as well. The resultant fixed expenses are very high.

Hence the utilisation of installed production capacity of a unit is the most important factor which may decide the economic viability of a unit. A large paper mill has to operate at or near its installed capacity to be viable. Hence, all-out efforts have to be made to ensure that all the equipments run at their optimum capacities without the least interruptions from areas like raw material, chemicals, power and steam, industrial relations and maintenance.

Energy Consumption

The unit consumption of steam and electricity in a large paper mill with multiple equipments is very high. With the increase in coal prices and electricity tariff the costs have sky-rocketed resulting in unbelievable burdens on the industries.

To achieve lower unit cost of steam and electricity, efforts have to be put in several stages like, larger chipping, cooking, washing, bleaching, refining and paper-making units to replace smaller ones, larger and more efficient boilers to replace small ones, larger steam efficient turbo-alternators etc.

With steep rises in the prices of coal and fuel oil and electricity duty, the unit costs of steam and electricity are also going up steadily. This calls for a set up to constantly monitor and conserve the use of steam and energy. Steps towards this may include :

- i) Proper insulation of all steam pipes and steam vessels & condensate return pipes.
- ii) Proper recycling of condensates.
- iii) Minimisation of steam load fluctuations.
- iv) Running of electric motors at optimum loads.
- v) Stoppage of idle running of electric motors.
- vi) Improving power factor wherever warranted.
- vii) Reducing transmission losses.

Labour Productivity

Labour cost is one of the important unit costs in a paper mill. Labour productivity assumes great importance in the economic viability of a unit. Efforts have to be made to improve labour productivity by way of re-layout, mechanisation and rationalisation of strength based on work-study.

Another important aspect in improving labour productivity is harmonious industrial relations to minimise the interferences and interruptions in production processes due to labour related problems. Taking the workers in confidence and seeking their participation is one important method.

Training of workers in existing as well as in new jobs is very important for sustaining and increasing the productivity levels of workers. Training is essential for new and modern plants and equipments to ensure their optimum utilisation. Hence, training of workers has to be strengthened wherever it is thought inadequate.

Conscious efforts should be made to introduce modern methods of moral boosting and motivation of the entire workforce from top to bottom.

Yield of Fibrous Raw Materials

Fibrous raw materials are the single largest expenses item in the manufacture of paper. Any perceptible increase in the yield of fibre from these raw materials will have a perceptible impact on the structure of manufacturing cost. The various stage like chipping, cooking, washing, bleaching, refining, paper making, finishing and waste control have to be improved upon to increase the yield of fibre.

In certain cases, high-yield pulping method has to be adopted either to replace or to supplement the existing old pulping methods in order to increase the yield of fibre from raw materials even when manufacturing high realization papers. This is where improved technology has to be brought in the country.

Modernisation of Plants and Process and Mechanisation of Material handling

The importance of modernisation of plants and processes of a Paper Mill to remain competitive and economically viable need not be overstressed. Old processes and machines require replacement by updated technology and processes and more efficient and faster equipments with better instrumentation and controls. "Low wage unskilled workers" have to give way to "High wage skilled workers" to increase considerably each worker's share of the value added to the product.

Balancing of equipments to remove bottlenecks at different stages of production plays an important part in streamlining production processes and improving production and productivity of a mill. Such balancing programmes have to be reviewed and updated at regular intervals with the changes in production patterns.

In certain mills, there may be material handling systems which are labour intensive and cumbersome and thus push up the cost per unit of production. All such material handling systems need cost benefit analysis and wherever viable need replacement with mechanisations which will be faster, cost effective and safer to operate.

Materials Management

Materials management, as is well known, is concerned with what to buy, when to buy, how much to buy at a time and at what price to buy. Incidence of raw materials chemicals, stores and spares costs being substantial in the paper manufacturing cost, materials management function assumes a great importance in the economy of a paper mill. An integrated and efficient materials management function with proper inventory control system ensures least disruption in manufacturing programmes with least capital locked up in inventories and thus optimises the cost of materials per unit of production.

Forest Management

Forest Management assumes a very important role in the cost of fibrous raw material. Mills having their own leased forests have to ensure the optimum exploitation of the forests for reducing the cost of raw materials. Fall in the output and quality of forests results in purchase from outside source the price of which is beyond the control of the management.

Management must be permitted to take steps like fertilisation, and plantation in the existing leased forests to improve the quantity and quality of raw materials.

Allocation of leased forests to different paper mills leaves much to be desired. Paper Mills should be allotted forests in the surrounding areas so that transportation distance is minimised.

And, to ensure projected future supply of raw materials, long term plans of plantation and forestry have to be implemented with high yield species.

Role of Management

The productivity of various inputs and the overall productivity of a paper mill have been discussed briefly. These improvements are feasible but the success or the failure of a unit depends on its management. Modern plants and the updated technology cannot bring in economic viability on their own. A strong and dynamic organisation with a positive, dynamic management style can only bring in all the changes and set a unit on its path of prosperity and growth.

Conclusion

The large old paper mills in India, even after having achieved substantial improvements in productivities in different areas, may not remain profitable. There are instances of paper mills achieving production beyond their installed capacities and yet not being able to break even. The reasons lie in the environment. The corporate management, in such a situation has to take major steps like expansion with replacement of the inefficient units by energy efficient units, modification of the processes and machines for producing high value items, large scale mechanisation of handling systems, etc.