

# Effect of Globalization and Automation on Small Scale Industry

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**Abstract:** *This is an era of highly competitive environment. Small Scale Manufacturing Organizations should be very conscious, while selecting product before starting manufacturing. Because without implementation of atomization it is very difficult to achieve break even small scale industries are facing same problem. Globalization of market also effecting small scale industries because international product quality and cost is better than produced by small scale because better facility & low cost of fund available in china, Korea, Malaysia.*

**Keywords:** Globalization, Industry, Small Scale, Manufacturing, Production, Automation, Quality

## 1. Introduction

It is a study on small scale industries that are facing a problem of automation in their relevant stream, along with globalization of the market. This study will highlight the problems faced by SSI in facility development.

- Product selection.
- Location of plant.
- Size of plant.
- Technology.
- Manpower.
- Government policies.
- Funds.

- Availability of similar product due to globalization.
- Cost cutting at each and every level of manufacturing.

## 2. Literature Review

- Globalization and its Impact on Small Scale Industries in India (PCMA Journal of Business).
- Role of Small Scale Industries in Globalization Era (VSRD International Journal of Business and Management Research, Santosh Kr. Pandey and Pankaj Kant Dixit).
- The Effect of Globalization on the Performance of Small and Medium Enterprises in the US: Does Owner's Race/Ethnicity Matter? (Elizabeth Asiedu, James Freeman).
- Projects Planning Analysis Selection Implementation and Review. (Prasanna Chandra).
- The relationship between cost, quantity, capital, technology has to be taken into consideration in order to achieve highly profit earning SSI and the emphasis should be given to BEA.
- The data envelopment analysis (DEA) is incorporated as a decision support tool to evaluate the degree to which each combination of automation and cost is feasible for SSI.
- Globalization controlling worldwide economy. (PCMA Journal of Business)

- Indian excise manual (Government of India chapter 2011)

## 3. Problem Definition

- The framework model is the tradeoff between product cost & product quality and product quantity in terms of investment using Break even analysis.
- Plant size, facility planning and skilled labor training cost and labor turnover analysis.
- Global market impact on product selection.

## 4. Methodology

### 4.1 Break Even Volume

A break even analysis shows the relation between the cost and profit with sale volume. The sales volume which equates total revenue with related cost and result in neither profit nor loss is called break even volume.

- Algebraic methods.

$$\text{BEP (Units)} = \frac{\text{Fixed Cost}}{(\text{Sales Price} - \text{Unit Variable Cost})}$$

$$\text{BEP (Units)} = \frac{\text{Fixed Costs}}{\text{Contribution Margin (Cm) Per Unit}}$$

## 5. Discussion

### 5.1 Banking Facilities for Large scale industries for Cash Flows

- Banking Nursing Program
- Banking Exposure of Limits,
- Limits on Stocks & Exports
- Concessional Rate of Interest

### 5.2 Banking Nursing Program

For large scale industries RBI has provided a Bank Nursing Program at the time of recession and for seek units in which RBI provides special funds with large time

for its re-payment without any co-laterals. This is one of the biggest financial supports for any industry. For small scale industries there is no provision for any financial support from RBI.

### 5.3 Banking Exposure of Limits

For large scale industries RBI has provided interchangeability of limits like Term Loan (FITL) into CC and (FITL) into Working Capital Term Loan (WCTL) which is a backbone of any large scale industry because CC and WCTL are the basic sources of Cash Flow.

### 5.4 Limits on Stocks & Exports

For Large scale industries RBI has provided a special facility of floating loan exposure on available stocks and export orders. For small scale industries only exposure of fund is totally based on the co-lateral securities which are a financial restriction for small scale industries to execute big export orders, generally for non excisable units.

### 5.5 Concessional Rate of Interest

For Large scale industries RBI has provided a special facility to manipulate cash crunch by simply providing excess limits without increasing monthly re-payment by adjusting rate of interest in CC or FITL or WCTL. Such facilities are not available for small scale industries.

## 6. Globalization of Indian Market

Globalization of Indian market has changed the Indian business scenario largely affecting small scale industries because of free import policy and easy fund transfer facility. Very economical products manufactured in China, Korea and Malaysia are easily available in India due to less duty on raw materials, easy availability of funds at small interest rates and high technology production systems as compared to India. Due to globalization very high productive machines are coming in India market at a very low import duty because of which small scale manufacturers are facing survival problems with upcoming medium scale manufacturers. Global competition has put large scale industries on a thinking process of reverse integration and to reduce their vendors for cost cutting which in turn is directly affecting the small scale industries. Global vendor development is again a big hindrance for the survival of small scale industries. Indian companies are sharing profit with global companies for technology hiring and that to by sharing a thin margin with Indian vendors.

## 7. Global Holdings in Indian Market

### 7.1 Automobile

Honda, Hyundai, Chevrolet, Renault, Suzuki, Toyota, Ford, BMW, Mercedes, Audi, Skoda, FiatWolkswagen, Nissan.

### 1. Electronics

L.G., Samsung, Sony, Nokia, Motorola, Haier, Sansui, Sharp, Philips, Brawn, Morphy Richards, Lenovo, H.P., Boss, canon, Nikon.

### 2. Consumer Durable

P.& G., Hindustan Lever, Amway, Lakme, Garnier, L'Oreal, Coca Cola, Pepsi, Lays, Ponds, Ray ban, Woodland, Lee Cooper, Wrangler, Reebok, Adidas, Rado, Crocodile.

### 3. Hard Core Industries

L.&T., Siemens, DRTS, Cutler Hammer, Mario Fizaro, Fanuc, True Blend, Fresto, Vickers, Usha Martin, Cincinnati.

## 8. Case Study 1

### Rigid P.V.C. Pipes

Field Irrigation Pvt. Ltd. Rambali Nagar Indore.

Phone no 07314046002

Plant capacity per annum: 700 mt.

### 8.1 Raw Materials

1. PVC Resin 52,000kg
2. D.O.P. 2400Lt
3. Stabilizers 1600kg
4. Lubricants 1400Lt
5. Colors 6000
6. Fillers 120000

### 8.2 PVC Compound Formulation: Manufacturing Process:

1. PVC Resin 100
2. Stabilizer (Non toxic) 5
3. Primary Plasticizer 1.5
4. Secondary Plasticizer 5
5. Internal Lubricant 3
6. External Lubricant 4
7. Epoxy Plasticizer 1.5
8. Pigment base 3
9. Fillers 20

### 8.3 Production Capacity: 700 MT.

### 8.4 Financial Aspects:

#### 8.4.1 Fixed capital:

##### a) Land and Building

1. Land : Purchase from MPDIC 2 acres Rs. 32,00,000/-
2. Work shop shed: 10,000 sq. ft. X 2 nos. @ 300/sq. ft. Rs.60,00,000/-
3. Office Building : 1000 sq. ft. @ 400/sq. ft. Rs. 4,00,000/-
4. Store cum godown 10,000 sq. ft. @ 300/sq. ft. Rs.30,00,000/-
5. Watchman shed , Parking stand Boundary etc. LS Rs. 5,00,000/-
6. Bore well LS Rs. 1,00,000/- Rs.1,86,00,000/-

**b) Machinery and Equipment:**

1. High speed Mixer, cap.50 kg. per batch/hr. filled with complete controls and cooling arrangement. 4 @ 90,000 - 3,60,000
  2. 65 mm/18 V PVC rigid pipe extrusion plant consisting of twin screw extruder, vacuum sizing unit, cooling tank, haul off unit and cutting device complete with controls and motor, etc. 200 kg/hr. 1 @ 11000000
  3. Dies size 63, 75, 90, 110 mm and mandrel size 2.5 kg/cm<sup>2</sup>, 4 kg/cm<sup>2</sup>, 6 kg/cm<sup>2</sup>, 10 kg/cm<sup>2</sup>. 1 set each 1,00,000
  4. Scraper, grinder, heavy duty fitted with electric motor 5 HP 1 90,000
  5. Overhead water tank and recycling pump units 1 35,000
  6. Weighing balance, heavy type industrial model 100 gm to 5 kg. 1 10,000
  7. Weighing balance, heavy type industrial model 1 kg. to 100 kg 1 15,000
  8. Pipe storage, racks, maintenance of small hand tools, greasing, oiling equipment, etc. 30,000  
Lab. Equipment consisting of capacity testing apparatus, Impact tests, compressive strength, Hydraulic pressure (long term, short term) apparatus. 2,30,000
  9. Expr. For electrification, installation of machinery, water supply, etc. 10,00,000
  10. Office furniture & stationery 80,000
- Total 13150000**

**c) Pre-Operative Experiment**

1. Preparation of project profile 10,000
  2. Contingency 10,000
  3. Sale tax regn. (CST & OST) 75,000
  4. Telephone 2,000
  5. Travelling 10,000
  6. Trial run 50,000
  7. Misc. exp. 30,000
- Total: 187,000.

Testing and Quality controls: Chemical testing lab., having chemical balance, Oven and equipment with testing equipment, apparatus for testing bulk density, specific gravity lead and tin estimation (in ppm),

**Fixed Capital**

Land & Shed : 1,86,00,000  
Machinery & equipment 13150000  
Pre-operative expenditure 187000 Total 31937000

**8.4.2 Working Capital P.M.**

**a. Staff and Labor payment:**

1. Manager 1 @ Rs.35000
  2. Production chemist cum supervisor 1 @ Rs.14000
  3. Clerk cum typist 2 @ Rs10000 20000
  4. Accountant 1 @ Rs.8000
  5. Storekeeper 2 @ Rs6000 120000
  6. Skilled workers 4 @ Rs.8,000 32,000
  7. Semi skilled workers 4 @ Rs.5,000 20,000
  8. Peon cum watchman 2 @ Rs.4,000 8,000
  9. Operator 2@15000 30000
- Total 179000

**8.4.3 Raw Material P.M.**

1. PVC Resin 48,000 @ Rs.78 3743952 ,
  2. D.O.P. 2200 @ 85/- 187000
  3. Stabilizers 1200 @ 85/- 102000
  4. Lubricants 600 @ 82/- 49200
  5. Colours 200 @ 140/- 28000
  6. Fillers 9800 @ 18/- 176400
- Total 4286552

**8.4.4 Utilities P.M.**

Electricity 1500 KWH @ 6.20 ,  
For factory & water supply 9300@25 ,  
232500per month

**8.4.5 Other contingent Expenditure (P.M.):**

1. Postage and stationery 3,000
2. Advertisement and publicity 10,000 ,
3. Traveling Marketing 44,000
4. Telephone 1700
5. Total= 58700

Sales per year: **700 MT.**

Total working capital per month = **Rs. 4580800**  
Working capital for 4 months = **Rs. 18323200**  
Total Capital investment= Rs.31937000  
Working capital investment= Rs.18323200  
**Total Rs. 46260200**

**8.4.6 Financial Analysis:**

1. Working capital for 12 months 45808000
2. Depreciation on plant and machinery @ 10% 131500
3. Dep. On shed @ 5% 50000
4. Depreciation on office furniture @ 20% 6000
5. Interest on total investment @ 12% 46260200 5551224

**8.4.7 Turnover (Per annum):**

Rigid PVC pipe produced per month using 80% efficiency of machinery 62,000 kg.  
Turnover = 700 MT @ 80 58100000

**Rate of return** = Profit x 100/total invt = 10%

**Net profit ratio** = Profit x 100/Turnover = 20.4%

**8.4.8 Break Even Analysis: Fixed cost:**

1. Depreciation on plant and machinery @ 10% 111500
2. Dep. On shed @ 5% 50000
3. Depreciation on office furniture @ 20% 6,000
4. Interest on total investment. @ 12% 5551224
5. 80% salary 1574400
6. 50% other exp. 29000
7. Power min 120000 8522124

**B.E.P.** = Fixed cost x profit /Fixed cost + profit  
**B.E.P.** = 55%

**9. Case Study 2:**

**Product: Rigid P.V.C. Pipes**  
Kirti Industry Pvt. Ltd. Pithampur Dist Dhar.  
UNDER BRAND NAME KASTA

**9.1 Plant Capacity per Annum: 9000 MT.**

**a) Raw Materials**

1. PVC Resin 668,2000kg
2. D.O.P. 308880Lt
3. Stabilizers 205990kg
4. Lubricants 179990Lt
5. Colors 77100Kg 7. Fillers 1546000Kg

**b) Production Capacity: 9000 MT.**

**c) Utility: Approx.**

**9.2 Financial Aspects:**

**9.2.1 Fixed Capital**

**a) Land and Building**

Land: Purchase from MPDIC 25 acres Rs. 1800,00,000/-  
 Work shop shed: 100,000 sq. ft. X 2 nos. @ 300/sq. ft. Rs.6000,00,00/- Office Building : 12000 sq. ft. @ 400/sq. ft. Rs. 48,00,000/- Store cum godown 100,000 sq. ft. @ 300/sq. ft. Rs.300,00,000/- Watchman shed, Parking stand, Boundary etc. LS Rs. 50,00,000/- Bore well LS Rs. 10,00,000/- Total Rs.2808,00,000/-

**b) Machinery and Equipment**

1. High speed Mixer, cap.100 kg. per batch/hr. filled with complete controls and cooling arrangement. 20 @ 90,000 -3600,000
2. 100 mm/36 V PVC rigid pipe extrusion plant consisting of twin screw extruder, vacuum sizing unit, cooling tank, haul off unit and cutting device complete with controls and motor, etc. 360 kg/hr. 5 @ 28800000- 144000000
3. Dies size 63, 75, 90, 110 mm and mandrel size 2.5 kg/cm<sup>2</sup>, 4 kg/cm<sup>2</sup>, 6 kg/cm<sup>2</sup>, 10 kg/cm<sup>2</sup>. 8 set each 1,00,000 – 8,00,000
4. Scraper, grinder, heavy duty fitted with electric motor 10 HP- 6 - 800,000
5. Overhead water tank and recycling pump units 8 240,000
6. Weighing balance, heavy type industrial model 100 gm to 5 kg. 6 200,000
7. Weighing balance, heavy type industrial model 1 kg. to 100 kg 2 70,000
8. Pipe storage, racks, maintenance of small hand tools, greasing, oiling equipment, etc. 1200,000
9. Testing and Quality controls apparatus. 4860,000
10. Expr. For electrification, installation of machinery, water supply, etc. 80,00,000
11. Office furniture & stationery 2000,000 164970000

**c) Pre-Operative Experiment**

1. Preparation of project profile 100,000
2. Contingency 100,000
3. Sale tax regn. (CST & OST) 500,000
4. Telephone 50,000
5. Travelling 400,000
6. Trial run 500,000
7. Misc. exp. 1000,000
8. Excise regn. 200000

9. ISI regn. 300000
10. Brand regn. 100000 3250000

**Fixed Capital:**

Land & Shed: 2268,00,000  
 Machinery & equipment 164970000  
 Pre-operative expenditure 3250000  
 Total 395020000

**9.3 Working Capital P.M.**

**A) Staff and Labour payment :**

1. Director 2 @ 150000 – 300000
  2. GM 2 @ Rs.80000 – 160000
  3. Assistant Manager 3 @ Rs 40000 – 120000
  4. Production in charge 2@ Rs 27000 - 54000
  5. Production chemist cum supervisor 4 @ Rs.14000 – 56000
  6. Clerk cum typist 4 @ Rs10000 – 40000
  7. Chartered Accountant 1@ Rs 50000 – 50000
  8. Company CS 1@ Rs 35000 - 35000
  9. Accountant 4 @ Rs.8000 - 32000
  10. Storekeeper 6 @ Rs6000 – 36000
  11. Skilled workers 20 @ Rs.8,000 -160,000
  12. Semi skilled workers 30 @ Rs.5,000 - 150,000
  13. Peon cum watchman 8 @ Rs.4,000 - 32,000
  14. Operator 10 @ 15000 - 150000
  15. Manger sale 2 @ 30000 - 60000
  16. sales team 10 @ 15000 - 150000
- Total 1585000

**B) Raw material P.M.**

1. PVC Resin 668,2000 @ Rs.75 501150000
  2. D.O.P. 308880 @ 80/- 24710400
  3. Stabilizers 205990 @ 80/- 16479200
  4. Lubricants 179990 @ 2/- 14759180
  5. Colours 77100 @ 140/- 10794000
  6. Fillers 1546000 @ 18/- 27828000
- Total: 595720780

**C) Utilities P.M.**

Electricity 210000 KWH @ 6.20 1302000  
 For factory & water supply 4000@ 25 100000  
 Total 1402000

**D) Other contingent Expenditure (P.M.):**

1. Postage and stationery 3,0000
  2. Advertisement and publicity 500,000
  3. Traveling Marketing 44,0000
  4. Telephone 17000
- Total=987000

**Sales per year: 9000 MT.**

Total working capital per month = **Rs. 52032398**  
 Working capital for 4 months = **Rs. 208129593**  
 Total Capital investment = **Rs. 395020000**  
 Total **603149593**

**9.4 Financial Analysis:**

1. Working capital for 12 months 624388776
2. Depreciation on plant and machinery @ 10% 16497000
3. Dep. On shed @ 5% 1000000

4. Depreciation on office furniture @ 20% 400000
  5. Interest on total invt. @ 12% @ 35% 21713385
- Total 663999161

### 9.5 Turnover (Per annum):

Rigid PVC pipe produced per month using 80% efficiency of machinery.

Turnover = 9000 MT @ 85Rs/Kg 765000000  
Profit: Rs 765000000 – 663999161 = 101000838  
Rate of return = Profit x 100/Total invt = 16%  
Net profit ratio = Profit x 100/Turnover = 34.4%

### 9.6 Break Even Analysis: Fixed cost:

1. Depreciation on plant and machinery @ 10% 16497000
2. Dep. On shed @ 5% 1000000
3. Depreciation on office furniture @ 20% 400000
4. Interest on total invt. @ 12% 21713385
5. 80% salary 15744000
6. 50% other exp. 600000
7. Power min3660000 Total 68614785

**B.E.P.** = Fixed cost x profit /Fixed cost + profit **B.E.P**  
**=34%**

## 10. Finding and Conclusion

Due to large scale production pre operational costs and operational costs reduces by 12%. Due to large scale production purchase cost of raw material and its price protection increases profit by 5.6%. Due to large scale production and synchronized working labor loses and labor requirements get reduced by 6.2%. Due to open global market 33% of total production is consumed at higher premium value which increases the net profit by 6%., Due to market capitalization and public sharing, low interest rate capital is available which reduces overall working capital investment up to 8.8% . ,

Deducting the followings:

- Average excise duty is 12.5%. Export duty drawback 2% Average sales tax 5%.
- Yearly Rs.114558600 is an extra saving.

This reduces the breakeven point by further 11%. This increases the net profit by 9%.

- 1 At small scale production cost is high and difficult to achieve breakeven point.
- 2 Banking polices are not supportive to small industry
- 3 Government polices and tax benefits are more for large scale industry.
- 4 Global market is open for all due to relaxation in dumping act.
- 5 India is huge market for global business.

## References

- [1] Financial Management (by M.Khan and P.K. Jain).
- [2] Kyoto Protocols Clean Development Mechanism – It's Feasibility to Indian Small Scale Industries Under Globalization (by D. B. Varadarajan).

- [3] Management, systems and society: an introduction (by Richard Arvind Johnson).
- [4] Organization Development (by Bradford D. L. and Burke)
- [5] Productivity Awareness among SSI Units: A Case Study (by N. Rajyalakshmi).
- [6] Project Planning Analysis (by Prasanna Chandra).
- [7] Small Industry and Globalization (by M. Mathew)
- [8] World Trade Organization and Its Implications on Small Scale Industries in Karnataka (by M. J. Krishna).

## Author Profile



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