# Study the Importance and Impact of Factors Affecting on Industrial Productivity of Medium Scale Industries in Jalgaon District

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# Abstract:

Productivity plays an important role in the industry. It helps industries to be competitive, to achieve its goals. The objectives of this research are; one, to study the importance of factors affecting on industrial productivity and second, to find the impact of these factors on industrial productivity of medium scale industries in Jalgaon district.

The above objectives have been achieved through the analysis of 102 questionnaires and the result of this analysis shows that, there are two main factors which have significant impact on the industrial productivity in the medium scale industries of Jalgaon District. They are 1. Technological factors 2. Production factors-(raw materials)

Key words: Productivity, medium scale industries, factors

# **Introduction:**

To the common man productivity is output divided by input. In the words of J.F. Bell broadly and basically defined productivity is, of course, the relations between output and input, a measurement of efficiency with which resources of all kinds are transformed." Productivity is a function of providing maximum to society in minimum consumption of resource.

Medium scale industries are classified based on the investment made in those industries. For Manufacturing Sector investment should be more than five crore rupees but does not exceed ten crore rupees whereas in service sector is should be more than two crore rupees but does not exceed five crore rupees. In the Jalgaon there are good number of medium scale industries are located and it is very essential that productivity of such industries should be study for increase in their overall performance.

The study is centre around the Jalgaon. It is a city located in western India, to the north of the Maharashtra state. Jalgaon is situated within the productive, irrigated agricultural region of

Khandesh, Jalgaon has a municipal corporation which is home to 460,468 inhabitants at the 2011 census.

# **Statement of the Problem:**

The research study develops its objectives, scope, hypothesis, data collection and analysis, which are discussed in the appropriate places in this research paper.

With an increasing competition, it becomes important to undertake a study which involves the following problems:

- 1. Why the productivity of medium scale industries is not high?
- 2. What are the important factors responsible for this?
- 3. Whether these factors really have a significant impact on productivity of medium scale industries in Jalgaon region.

Therefore, the measurement of these factors affecting on productivity assumes critical importance in the Jalgaon industrial sector.

# **Objectives:**

This is study is conducted to achieve the following objectives:

- 1. To study the importance of factors affecting on industrial productivity of medium scale industries.
- 2. To find the impact of these factors on industrial productivity of medium scale industries in Jalgaon district.

# **Research Methodology:**

The purpose of this empirical as well as qualitative study was to assess whether there are certain important factors of productivity in medium scale industries in Jalgaon district, and if these factors has impact on industrial productivity of medium scale industries in Jalgaon district.

<u>Research Design and Approach</u>: Quantitative research along with a small component of qualitative research was used to examine data. Since, this research is a study the importance and impact of factors affecting on industrial productivity of medium scale industries in Jalgaon District; the study examines data collected by researcher. The method of study will utilize data collected from a target random sample of 102 respondents from various medium scale industries, as the study is restricted to Jalgaon district which has a good number of medium scale industries.

<u>Population, Sample and Sampling Technique:</u> The selection of population was of vital importance for the research of this study. This research was carried out in the Jalgaon district. A mixed design technique was used for this research. Random sampling was used as samples were collected from different talukas of Jalgaon district. The statistical tools that were used for this study include Friedman test analysis and descriptive statistics formed the basis of the beginning of the analysis.

#### **Data Analysis and Interpretations:**

 Technological Factors: The study covers the medium scale sectors for investigating importance and impact of technological factors influencing productivity. 1= Not at all Important, 2= Slightly Important, 3= Moderately Important, 4= Very Important, 5= Extremely Important



For technological factors following factors are considered mode of working, skilled labour, need of automation, improvement in quality of product and imported v/s domestic technology. Above chart shows that 29 respondents responded mode of working as extremely important whereas 72 respondents responded as very important. 14 respondents responded skilled labour as extremely important whereas 75 respondents responded as very important. 13 respondents responded skilled labour as moderately important.29 respondents responded Need of Automation as extremely important whereas 63 respondents responded as very important. 10 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded set responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Need of Automation as moderately important. 32 respondents responded Improvement in quality of product as extremely important whereas 68 respondents responded as very important. 02 respondents responded Improvement in quality of product as moderately important in quality of product as moderately important.

respondents responded Improvement in quality of product as extremely important whereas 76 respondents responded as very important. 07 respondents, 03 respondents, 01 respondents responded Improvement in quality of product as moderately important, Slightly Important and not at all Important respectively.



Fig.1. Mode of Working

Fig.2. Skilled Labour

Fig. 3. Need of Automation



Fig. 4. Improvement in quality of product Fig. 5. Ir

Fig. 5. Imported v/s Domestic technology

1= Not at all Important, 2= Slightly Important, 3= Moderately Important, 4= Very Important, 5= Extremely Important From fig.2 it can be seen that for mode of working, 71% respondent consider mode of working as a very important factor followed by 28% respondent extremely important and only one respondent considered it as a moderately important. In fig.3 skilled labour, 73 % responded consider skilled labour as a very important factor followed by 14% respondent extremely important and 13 % respondent is moderately important. From fig.4 need of automation, 62 % responded consider need of automation as a very important factor followed by 28% respondent extremely important and 10 % respondent is moderately important. In fig.5 Improvement in quality of product, 67 % responded consider Improvement in quality of product as a very important factor followed by 31% respondent extremely important and only two percent respondent is moderately important. In fig.6 imported v/s domestic technology, 74 % responded consider imported v/s domestic technology as a very important factor followed by 15% respondent extremely important and only seven percent respondent is moderately important, three percent respondent given it as slightly important and one percent respondent consider it as not at all important.

# Friedman Test for Technological factors:

The following five items were used to measure perception of importance of technology that is Mode of working, Skilled Labour, Need of Automation, Improvement in quality of product and imported v/s Domestic technology. Importance of each factor is measured using 5 point scale. 1= Not at all Important, 2= Slightly Important, 3= Moderately Important, 4= Very Important, 5= Extremely Important

Rank- Medium Sector				
Technological Factors	Mean Rank			
Mode of working	3.26			
Skilled Labour	2.71			
Need of Automation	3.06			
Improvement in quality of product	3.25			
Imported v/s Domestic technology	2.72			
Chi-Square	33.910			
Asymp. Sig. (p value)	0.000			

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For medium sectors, Friedman test is significant (p < 0.05). Hence medium sector perceive importance of technological factors differently.

From mean rank, it can be seen that medium sectors pursues more importance to mode of working, need of automation and improvement in quality of product as more important technological factors.

Descriptive Statistics: To determine whether medium sector differ importance actually attached to various technological factors.

<b>Descriptive Statistics</b> , N=102						
<b>Technological Factors</b>	Mean	Std. Deviation	F	Sig.		
Mode of working	3.81	.593	13.391	.000		
Skilled Labour	3.72	.569	26.465	.000		
Need of Automation	3.93	.618	12.126	.000		
Improvement in quality of product	3.98	.629	10.175	.000		
Imported v/s Domestic technology	3.66	.711	19.818	.000		

 Table 2: Descriptive Statistics of technological factors

From the above table, it is seen that for mode of working, has mean medium sectors has mean of 3.8. F= 13.391 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to mode of working. From the above table, it is seen that for Skilled Labour, medium sectors has mean of 3.7. F= 26.465 and p<0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Skilled Labour.

From the above table, it is seen that for Need of Automation, medium sectors has mean of 3.9. F= 12.126 and p<0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Need of Automation. From the above table, it is seen that for Improvement in quality of product, medium sectors has mean of 3.9. F= 10.175 and p<0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Improvement in quality of product.

From the above table, it is seen that for imported v/s Domestic technology, medium sectors has mean of 3.6. F= 19.818 and p<0.001. Hence Friedman test is significant. Hence medium sectors attached importance to imported v/s domestic technology.

#### 2. Production Factors:

The study covers the medium scale sectors for investigating importance and impact of production factors influencing productivity. In this study, raw material is considers as major production factor.





as extremely important whereas 35 respondents responded as very important. Four respondents responded availability of raw material as moderately important. 52 respondents responded source of raw material as extremely important whereas 37 respondents responded as very important. 13 respondents responded source of raw material as moderately important. 60 respondents responded number of suppliers as extremely important whereas 33 respondents responded as very important. Eight respondents responded number of suppliers as moderately important whereas 33 respondents responded as very important. Eight respondents responded number of suppliers as moderately important. 51 respondents responded transportation of raw material as extremely important whereas 45 respondents responded as very important. Six respondents responded Transportation of Raw Material as moderately important.



Fig. 8. Quality of Raw Material Fig. 9. Availability of Raw Material Fig. 10. Source of Raw Materials



Fig. 11. Number of Suppliers Fig. 12. Transportation of Raw Materials

From fig.8 quality of raw material, 39 % responded consider imported v/s domestic technology as a very important factor followed by 60% respondent extremely important and only one percent respondent is moderately important. From fig.9 availability of raw material, 34 % responded consider availability of raw material as a very important factor followed by 62% respondent extremely important and only four percent respondent is moderately important. From fig.10 source of raw materials, 36 % responded consider imported v/s

domestic technology as a very important factor followed by 51% respondent extremely important and 13% respondent is moderately important. From fig.11 for number of suppliers, 32% responded consider number of suppliers as a very important factor followed by 59% respondent extremely important and only eight percent respondent is moderately important, one percent respondent given it as slightly important.

From fig.12 transportation of raw materials, 44 % responded consider transportation of raw materials as a very important factor followed by 50% respondent extremely important and only six percent respondent is moderately important.

# Importance of production (raw material) as a factor in improving productivity of medium scale sectors:

The following five items were used to measure perception of importance of production. quality of raw material, availability of raw material, source of raw material, number of suppliers, transportation of raw material

Importance of each factor is measured using 5 point scale.

1= Not at all Important, 2= Slightly Important, 3= Moderately Important, 4= Very Important,

5= Extremely Important

Ranks - Medium Sector				
Production Factors	Mean Rank			
Quality of Raw Material	3.21			
Availability of Raw Material	3.19			
Source of Raw Material	2.75			
Number of Suppliers	2.99			
Transportation of Raw Material	2.86			
Chi-Square	21.234			
Asymp. Sig. (p value)	0.000			

#### Friedman Test for Production:

For medium sectors,  $\overline{F}$  test is significant (p<0.05). Hence medium sector perceive importance to production related factors differently.

From mean rank, it can be seen that medium sectors pursue more importance to quality of raw material, availability of raw material and number of suppliers as more important production factors.

Descriptive Statistics, N=102						
	Mean	Std. Deviation	F	Sig.		
Quality of Raw Material	3.98	.901	23.180	0.000		
Availability of Raw Material	3.97	.850	22.059	0.000		
Source of Raw Material	4.07	.847	16.818	0.000		
Number of Suppliers	4.14	.845	9.279	0.000		
Transportation of Raw Material	4.05	.860	14.109	0.000		

<u>Descriptive Statistics</u>: To determine whether medium sector differ importance actually attached to various productions factors.

**Table 4: Descriptive statistics of production factors** 

From the above table, it is seen that for Quality of Raw Material, medium sectors has mean of 3.98. F= 23.180 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Quality of Raw Material.

From the above table, it is seen that for availability of raw material, medium sectors has mean of 3.97. F=22.059 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to availability of raw material.

From the above table, it is seen that for Source of Raw Material, medium sectors has mean of 4.07. F= 16.818 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Source of Raw Material.

From the above table, it is seen that for Number of Suppliers, medium sectors has mean of 4.1. F= 9.279 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Number of Suppliers.

From the above table, it is seen that for Transportation of Raw Material, medium sectors has mean of 4.05. F= 14.109 and p <0.001. Hence Friedman test is significant. Hence medium sectors attached importance to Transportation of Raw Material.

#### **Finding and Conclusions:**

The purpose of this research study was to study the importance and impact of factors affecting on industrial productivity of medium scale industries in Jalgaon district. Interpretation of Findings:

A random sample of n=102 collected from medium scale industries of Jalgaon district was used for this study. The collected data were used to check the objectives and answer the research questions. This section provides an interpretation of the research findings.

#### **Technological Factors:**

The study covers the medium scale sectors for investigating importance and impact of technological factors influencing productivity.

For technological factors following factors are considered Mode of working, Skilled Labour, Need of Automation, Improvement in quality of product and imported v/s Domestic technology.

The study found that 28% respondent responded technological factors as extremely important factors, 71 % respondent considered it as very important factors whereas just six percentage respondent considered technological factors as a moderately important.

It can be seen that improvement in quality of product is extremely important followed by mode of working and need of automation whereas very few respondent responded skilled labour and imported v/s domestic technology as extremely important.

It can be seen that Imported v/s Domestic technology is very important followed by Skilled Labour and Mode of working whereas few responded Need of Automation and Improvement in quality of product as a very important.

It can be seen that Skilled Labour and Need of Automation are moderately important followed by Imported v/s Domestic technology, Improvement in quality of product and Mode of working.

From pie chart it can be found that for mode of working is considered as a very important factor. For skilled labour respondent are considered it as a very important factor. For need of automation, improvement in quality of product as well as imported v/s domestic technology, respondent responded it as a very important factor. Afterwards all these factors are considered as extremely important followed by moderately important.

Mean for Mode of working 3.26, Skilled Labour 2.71, Need of Automation 3.06, Improvement in quality of product 3.25 and imported v/s Domestic technology 2.72. Chi-Square value is 33.910. P-value is greater than 0.05.

Friedman test is significant (p < 0.05). Hence medium sector has importance of technological factors. From mean rank, it can be seen that medium sectors pursues more importance to mode of working, need of automation and improvement in quality of product as more important technological factors. Hence all these factors have importance and impact on productivity differently.

As p < 0.001, Friedman test is significant for all the factors. For all the factors of technology, it can be seen that Friedman test is significant and hence medium sector is attached important to all technological factors and has different impact.

# **Production Factors**

For production factors following factors are considered Quality of Raw Material, Availability of Raw Material, Source of Raw Material, Number of Suppliers and Transportation of Raw Material.

The study shows that 57% respondents are responded that quality of raw material, availability of raw material, source of raw material, number of suppliers and transportation of raw material all these production factors are extremely important whereas 38 % respondents considered it as very important factor. Only six percent respondent responded as moderately important.

The study found that for 56 % respondent responded quality of raw material, availability of raw material, source of raw materials, number of suppliers and transportation of raw materials are extremely important factors whereas 37 % responded consider quality of raw material, availability of raw material, source of raw materials, number of suppliers and transportation of raw materials are very important.

The mean of Quality of Raw Material is 3.21, Availability of Raw Material 3.19, Source of Raw Material 2.75, Number of Suppliers 2.99, and Transportation of Raw Material 2.86. The Chi-Square value is 21.234 and p value is greater than 0.05.

From the study, it is seen that for Quality of Raw Material, availability of raw material, Source of Raw Material, Number of Suppliers and Transportation of Raw Material the p value is less than 0.001. Hence Friedman test is significant. Hence medium sectors attached importance to all production factors and have impact differently.

# **Conclusion:**

From the above study it can be concluded that technological and production these two factors plays important role in industrial productivity. All the factors of technology including mode of working, skilled labour, need of automation, improvement in quality of product and imported v/s domestic technology have different importance and different impact on medium scale industries of Jalgaon district. As well as all the factors of production including quality of raw material, availability of raw material, source of raw material, number of suppliers and transportation of raw material also having equally importance and but different impact.

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