PRODUCTIVITY AND COMPETITIVENESS - AN ANALYSIS

T.B.Pankhania[1], A.H.Jariya[2], V.K.Modi[3]

[1]*Associate Professor in Mechanical Engineering and Head, Workshop, B.V.M.Engineering College, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, India. tbp@sify.com*
[2]*Assistant Professor in Production Engineering B.V.M. Engineering College, Gujarat Technological University, Ahmadabad, India, jariya_akil@yahoo.com*
[3]*Lecturer, Mechanical Engineering Department, B.&B. Institute of Technology, Vallabh Vidyanagar, Gujarat Technological University, Ahmadabad, Gujarat, India, modi_vinit@yahoo.com*

Abstract
The paper explores the impacts of globalization on industrial performance and productivity. It also records the effects of ISO certification on industries' image and performance. The hypotheses were tested to know how far these statements hold good. For that Chi-Square tests were carried out to know the impacts of globalization and competitions in the present industrial scenario. Regression analysis also highlights the relation between income and Category of industries in the estate considered for the study. The structured questionnaire was used as a tool to collect primary data to use for the statistical analysis. The reliability statistic, Cronbatch's alpha suggests that questionnaire is with consistency and can be used for the analysis. It is concluded that globalization and competitiveness are strongly correlated with improved industrial performance and productivity scenario.

Keywords: Competitiveness, explore, globalization, impacts, performance, questionnaire, reliability, scenario

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1. INTRODUCTION

Two third of today's business operate globally through global markets, global operations, global financing, and global supply chains. A global marketplace for products and services means more customers and more intense competition. In the broadest terms, we speak of competitiveness in reference to other countries rather than to other companies. That's because how effectively a nation competes in the global marketplace, affects the economic success of the nation and the quality of life for its citizens. The U.S. department of commerce defines competitiveness as "the degree to which a nation can produce goods and services that meet the test of international markets while simultaneously maintaining or expanding the real incomes of its citizens". *The most common measure of competitiveness is productivity.* Increases in productivity allow wages to grow without producing inflation thus raising the standard of living. Productivity growth also represents how quickly an economy can expand its capacity to supply goods and services [16].

Safety and Productivity has positive relationship with each other. In order to have higher productivity it is essential to provide better and safe working conditions.

Naturally, any kind of loss is directly affecting the productivity of the organization. So, better and safe working environment can reduce the chances of accidents. This will create good reputation in the market [18].

Good housekeeping is more than cleanliness; it is good in order, when there are no unnecessary things about, and when all necessary things are in their proper places. The better the worker, the higher the production, and the lower the accident rare, better the performance leading to higher productivity [17].

2. RELEVANCE OF THE STUDY

In the present age of cut-throat competition, it becomes highly necessary for an organisation to be dynamic in the globalisation era. This is possible only when the employees, employers and organizations are capable enough to cope up with the changing world scenario. The present changing scenario in the globalization, an organization cannot be run merely on investment and returns, but more on the quality of their products, services, human resource, productivity, timeliness, cost-reduction and its commitment to organization's goals. Therefore, the industrial productivity became the centre of attention as far as the research is concerned. In the present industrial scenario the organization has to maintain good standard to stand in the highly competitive world of globalization [6].

Talent is often cited as a key differentiator for competitive success. As more and more organisations realised that managing talent effectively is the key to business success; it is a topic of interest to both industry and academia. Human capital organisations not only have good talent, but, talent attraction, retention, and performance are essential for organisational capability [7].

3. OBJECTIVES OF THE STUDY

The primary objective of this research was to take the stock of existing situations and to assess the industrial productivity and the major impacts of globalization and competitiveness on industrial performance.

4. RESEARCH DESIGN

Research design is a road map of the collection, measurement and analysis of data. The present study was conducted in Vitthal Udyognagar, an industrial estate in Anand district of Gujarat, India. The units were selected from the members' directory published by Vitthal Udyognagar Industries Association (VUIA). The basic methodology that followed was the questionnaire method. Structured questionnaires were distributed among the randomly selected organizations. The five point Likert scale: strongly agree (05), agree (04), neutral (03), disagree (02) and strongly disagree (01) was used. The questionnaires were checked for incomplete, inconsistent, and ambiguous responses. The questionnaires were discarded with large proportion of unsatisfactory responses and this has resulted in final sample size as shown in Table 1.

**Table -1:** Sample size and percentage

Questionnaire distributed	Questionnaire Usable	Percent
250	156	62.40

These responses were considered from usable questionnaires, 62.40% is acceptable for the statistical analysis.

Category of the Company: Majority units are in small scale. In this survey 70.51% (110), small scale, 19.23% (30), medium scale and 10.26 %(16), large scale units have provided relevant data for this research study, see Table 2.

Table - 2: Category of the company

Category	Frequency	Percentage
Small Scale	110	70.51
Medium Scale	30	19.23
Large Scale	16	10.26
Total	156	100.00
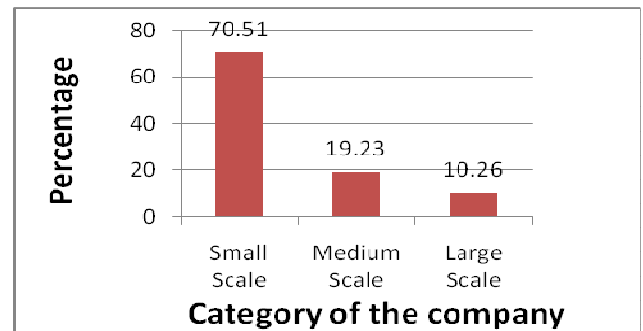
Chart -1: Category of the company

5. STATISTICAL ANALYSIS

5.1 An Index of Reliability

An effective tool for measuring reliability is Cronbach's alpha, which is a numerical coefficient of reliability. Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted. The higher the score, the more reliable is the generated scale, alpha value 0.7 to be considered as an acceptable reliability. Table 3 shows the reliability measures [4].

Table - 3: Reliability Statistic

Sr. No.	Cronbach's Alpha	Internal Reliability
1	≥ 0.90	Excellent
2	**≥ 0.80**	**Good**
3	≥ 0.70	Acceptable

Here, the questionnaire is reliable with Cronbatch's alpha (α) = 0.838 and it can be used for statistical analysis.

5.2 Globalization and Competitiveness Impacts

For this purpose t-test was carried out with assumed mean (μ) = 3.0, on the responses of the statements on five points scale, the middle part was considered as 'Neutral' for all statements and was given an equivalent number of 3.0. The result of these test are given in the following Table 4 and Table 5.

Table - 4: One-Sample Statistics (t – test)

Statement	N	Mean	SD	SE Mean
1	156	4.48	0.876	0.070
2	156	4.20	0.926	0.074
3	156	4.10	0.924	0.074
4	156	4.38	1.144	0.092
5	156	4.14	1.277	0.102
6	156	3.80	1.302	0.104
7	156	3.81	1.281	0.103

Table - 5: One-Sample test

					Test Value = 3 (95% Confidence Interval of the Difference)	
State	't'	DF	Sig. (**)	Mean Difference	Lower	Upper
1	21.113	155	0.000	1.481	1.34	1.62
2	16.173	155	0.000	1.199	1.05	1.35
3	14.902	155	0.000	1.103	0.96	1.25
4	15.053	155	0.000	1.378	1.20	1.56
5	11.157	155	0.000	1.141	0.94	1.34
6	7.685	155	0.000	0.801	0.60	1.01
7	7.877	155	0.000	0.808	0.61	1.01

5.2.1 Statements and Analysis

1. Globalization has changed Industrial Scenario and it's a demand of the day, increases productivity

The hypothesis is rejected because the mean of all the responses 4.48 (Table 4 & 5) which is higher than the assumed value of $\mu = 3.0$ and that has led to the rejection of null hypothesis. Thus, a mean of 4.48 is very high value and it shows that all the respondents in general agree to the statements that 'Globalization has changed industrial scenario and it's a demand of the day, increases productivity'. As the low value of standard deviation 0.876 and mean equal to 4.48 shows that average response of all the respondents falls between strongly agree and agree to the said statement and there is very less dispersion between the thinking of all the respondents. It may, therefore, be inferred that in general all the respondents associate 'globalization has changed industrial scenario and it's a demand of the day, increases productivity'.

2. Job opportunities, productivity and living standards have increased due to globalization.

The hypothesis is rejected because the mean of the responses of all the responses is 4.20 (Table 4&5) which is higher than the assumed value of $\mu = 3.0$ and that has led to the rejection of null hypothesis. Thus, a mean of 4.20 is very high value and it shows that all the respondents in general agree to the statement. As the low value of standard deviation 0.926 and mean equal to 4.20 shows that average response of all the respondents falls between strongly agree and agree to the said statement and there is very less dispersion between the thinking of all the respondents. It may, therefore, be inferred that in general all the respondents associate ' job opportunities, productivity and living standards have increased due to globalization'.

3. Liberalization has improved performance and competitiveness

The hypothesis is rejected because the mean of the all responses is 4.10 (Table 4&5) which is higher than the assumed value of $\mu = 3.0$ and that has led to the rejection of null hypothesis. Thus, a mean of 4.10 is very high value and it shows that all the respondents in general agree to the statement. As the low value of standard deviation 0.924 and mean equal to 4.10 shows that average response of all the respondents falls between strongly agree and agree to the said statement and there is very less dispersion between the thinking of all the respondents. It may, therefore, be inferred that in general all the respondents, associate 'liberalization has improved performance and competitiveness'.

4. Privatizations are very essential to improve industrial performance in the highly competitive world

The hypothesis is rejected because the mean of the responses of all the organization is 4.38 (Table 4&5) which is higher than the assumed value of $\mu = 3.0$ and that has led to the rejection of null hypothesis. Thus, a mean of 4.38 is very high value and it shows that all the respondents in general agree to the statement. As the high value of standard deviation 1.144 is quite large and means equal to 4.38 shows that there is variation in the thinking of all the respondents. Average response of all the respondents falls between strongly agrees and agrees to the said statement and there is diverse view on this statement.

5. ISO certification helps improve the image of the company

The hypothesis is rejected because the mean of the responses of all the organization is 4.14 (Table 4&5), which are higher than the assumed value of $\mu = 3.0$ and that have led to the rejection of null hypothesis. Thus, a mean of 4.14 is very high value and it shows that all the respondents in general agree to the statement. As the high value of standard deviation 1.277 is quite large and means equal to 4.14 shows that there is variation in the thinking of all the respondents. Average response of all the respondents falls between strongly agrees and agrees to the said statement and there is diverse view on this statement.

6. ISO certification helps increase exports; profit, turnover, expectations of the company

The hypothesis is rejected because the mean of the responses of all the organization is 3.80(Table 4&5) which is higher than the assumed value of $\mu = 3.0$ and that has led to the rejection of null hypothesis. Thus, a mean of 3.80 is high value and it

shows that all the respondents in general agree to the statement. As the high value of standard deviation 1.308 is quite large and means equal to 3.80 shows that there is variation in the thinking of all the respondents. Average response of all the respondents falls between agrees and neutral to the said statement and there is diverse view on this statement.

7.   ISO certification helps increase productivity

The hypothesis is rejected because the mean of the responses of all the organization is 3.81(Table 2&3) which is higher than the assumed value of μ = 3.0 and that has led to the rejection of null hypothesis. Thus, a mean of 3.81 is high value and it shows that all the respondents in general agree to the statement. As the high value of standard deviation 1.281 is quite large and means equal to 3.81 shows that there is variation in the thinking of all the respondents. Average response of all the respondents falls between agrees and neutral to the said statement and there is diverse view on this statement.

Thus, globalization and competitiveness has very high impacts on the industrial performance to compete the global business.

5.3 Analysis of Variance (ANOVA)

One of the most powerful tools of statistical analysis is what is known as analysis of variance. Analysis of variance is used for examining the differences in the mean values of the dependent variable associated with the effect of the controlled independent variables. Essentially, analysis of variance is used as a test of means of two or more population [6].

5.3.1 Relation between Respondents' Annual Income and Categories of the Company: (Small Scale, Medium Scale and Large Scale Industries).

Table -6: Descriptive table

Variable: Annual income ↔ Scale of the company

Income Group	N	Mean	SD	SE	95% Confidence Interval for Mean	
					LB	UB
1	22	1.14	0.351	0.075	0.98	1.29
2	55	1.33	0.579	0.078	1.17	1.48
3	56	1.52	0.763	0.102	1.31	1.72
4	23	1.52	0.790	0.165	1.18	1.86
Total	156	1.40	0.669	0.054	1.29	1.50

Table 6: To study the impact of scale of company on annual income of the respondents, analysis of variance was performed. The hypotheses are as under:
H_0: there is no impact of scale of industry on annual income of the respondents.
H_1: there is impact of scale of industry on annual income of the respondents.

Table -7: ANOVA

Variable: Annual income ↔ Scale of the company

	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	2.938	3	0.979	2.241	0.086
Within Groups	66.421	152	0.437		
Total	69.359	155			

Table-7: The test is performed at 5% level of significance (95% level of confidence). The significance value is 0.086 >0.05. The null hypothesis is not rejected and alternative hypothesis is accepted. *Hence it is concluded that there is an impact of scale of industry on annual income of the respondents.*

5.4 The Chi-Square (χ2) Test

It assists us in determining whether a systematic association exists between the two variables. It helps us to understand how one variable relates to another variable, statistics are available for examining the significance and strength of the association[15]

Table - 8: Globalization Impacts

Sr. No.	Variables	(05)	(04)	(03)	(02)	(01)	Total	χ^2 at DF =12
1	Industrial Scenario	97	48	7	0	4	156	CV = 77.54, P < 0.0001
2	Living Standard	63	74	15	1	3	156	TV =21.026, LSF =0.05
3	Liberalization	54	76	23	0	3	156	V=0.2035
4	Privatization	105	29	11	7	4	156	

χ^2 = Chi-square, DF = Degree of freedom, CV= Calculated value of Chi-square test, TV=Table value, LSF =Level of significance

Table 8: The "globalization" has positive relation. The employees are in agreement on the global effects in the organization where they are serving. Since, χ_{cv}^2 =77.54 $^>$ χ_{tv}^2 = 21.026, it has mentioned that the "globalization" is highly effective in making organization more competitive and more productive.

Table -9: ISO Certification

Sr. No.	Variables	(05)	(04)	(03)	(02)	(01)	Total	χ^2 at DF =8
5	Image of the company	86	40	15	11	4	156	CV = 16.97, P= 0.0304
6	Expectation of the company	58	50	27	13	8	156	TV =15.507, LSF =0.05
7	Increase Productivity	55	56	25	12	8	156	V = 0.1346

χ^2 = Chi-square, DF= Degree of freedom, CV= Calculated value of Chi-square test, TV=Table value, LSF =Level of significance

Table 9: The "ISO certification" has low positive relation. Majority of the respondents were in agreement and only few respondents were not in favor where, they are serving. Since, χ_{cv}^2 = 16.97 > χ_{tv}^2 = 15.507, it has mentioned that the "ISO certification" is required to improve the standard and the image of the company.

6. LIMITATIONS OF THE STUDY

The limitations of the study are non-availability of some secondary data, responses with reservation caused limited co-operation from some of the respondents, the postponements of the responses were time consuming and tiresome due to busy schedule or unwillingness to disclose certain information by the respondents, the time factors, poor awareness of some respondents were other limitations, lower education, language problem and lack of freedom to disclose the facts were major constraints to the most of the workers.

7. CONCLUSION

The paper clearly investigates on the basis of the stakeholders" point of views that globalization has changed the industrial scenario. This analysis clearly outlays that globalization and competitiveness has very high impacts on industrial performance to compete global markets. At the same time ISO Certification does not attract the stake holders. Those who failed to adopt the changes they will face failures miserably. Statistical analyses reveal that the hypotheses tested also inferred the same outcomes. There is impact of category of the industry on the annual income of the respondents. The Chi Square test also confirmed that there is global effects on industrial performance and There is imperative influence of ISO certification on industrial performance and hence, industrial productivity.

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BIOGRAPHIES

Dr.T.B.Pankhania, Associate Professor in Mechanical Engineering and Head, Workshop at B.V.M. Engineering College, Sardar Patel University,Vallabh Vidyanagar. He obtained his B.E. (Mech), M.E. (Mech), and Ph.D. from Sardar Patel University (SPU); Vallabh Vidhyanagar. His profile includes a stint of over 37 years of experience. He has published his 19 research papers in national and international journals and presented 6 research papers in International conferences.
Email: tbp@sify.com

Akil H. Jariya, Assistant Professor in Production Engineering at B.V.M. Engineering College, Gujarat Technological University, Ahmadabad; He obtained his B.E. (Mech.) from Bhavnagar University, Gujarat and M. Tech. (Mech.) from Nirma University, Ahmadabad, Gujarat. He has 4 years of teaching experience He has published his 2 research papers in international journals. His current areas of interest are CAD/CAM, Industrial Engineering and Managing Project.
E-mail: jariya_akil@yahoo.com

V.K.Modi, Lecturer in Mechanical Engineering at B & B Institute of Technology, Vallabh Vidyanagr.He obtained his master degree from M.S.University, Baroda. His areas of the interest are CAD-CAM and Industrial Engineering. He has 21 years of teaching experience. He has published seven research papers in National and International Journals and presented eight research papers in international conferences.
E-mail: modi_vinit@yahoo.com

Appendix: Questionnaire

[A] Category of the company:

☐ Small Scale   ☐ Medium Scale   ☐ Large Scale

[B] Globalization and Competitiveness:

Do you agree that productivity has increased due to globalization and competitiveness?

Sr. No	Statements	Strongly agree (05)	Agree (04)	Neutral (03)	Disagree (02)	Strongly disagree(01)
1.	Globalization has changed the industrial scenario.					
2.	Globalization has increased Job opportunities, productivity and living standard.					
3.	Liberalization has improved industrial performance and competitiveness.					
	Privatization is very essential to improve industrial performance in the highly competitive world					
5.	ISO certification helps improve the image of the company					
6.	ISO certification helps increase exports, profit, turnover, expectations of the company					
7.	ISO certification helps increase, productivity.					