



# Perceptions of Stakeholders about Industrial Performance - A Survey

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## ABSTRACT

The study was carried out at Vitthal Udyognagar of Anand district of Gujarat India, where more than 1000 industries are working. The majority units are in small scale. The estate was established some time in 1965 and has generated about 25000 employments. The estate is surrounded by two educational townships are considered as hubs of educations in almost all disciplines especially engineering & Technology. The statistical Analysis was conducted to uncover the factors which describe the scenarios and suggest means and measures to evaluate industrial performance of the industries of the estate. A structured questionnaire was used with 15 closed ended questions. The Likert scale was used to know the level of agreement of the stake holders about the industrial performance and the factors contributing higher industrial productivity.

**Keywords:** Estate, Educational Townships, Hubs, Statistical Analysis, Scenario, Questionnaire, industrial productivity

## 1. BACK GROUND OF RESEARCH STUDY

With the evolution of mankind, the technology has been playing a dominant role for the growth and prosperity of human race. This process of transformation of society employed with technology has been continuing with time, the hardship of people from the primitive age to the recent yester years was being marginalized substantially by the scientific developments along with judicious technological absorption. The twentieth century witnessed the phenomenal growth in physical sciences spawning huge industrial activities, such as, petrochemicals, pharmaceuticals, fertilizers, nuclear engineering, transmitters, the laser and microchips. New technologies reflect the fact that these are at the very core of the new technological paradigm. Developments in microelectronics and information technology have fundamentally changed industrial and services scenarios and directly affected almost everybody's life and work. It is increasingly important to ensure a broad understanding of what latest technologies will involve and especially what the consequences will be of accepting or rejecting the new technical innovations. The developing world must understand the huge prospects of these emerging technologies and simultaneously make sincere attempt to spread this message across the entire human community irrespective of geographic allocations, social systems, and political dominances so as to derive maximum benefits and thereby develop the quality of life of common masses.

## 2. SURVIVAL OF THE INDUSTRIAL ACTIVITY

With the growth of the industrial estate its problems also grew. Competition, development of technology, reliance on old methods and human skills, government policies and associated rules

and regulations, recurrent power cuts year after year; have all contributed their bit. This has resulted in reduced profitability of the industries (small and big), leading to widespread sickness and closure of many units. This has threatened the very foundation and survival of the industrial activity. With this in view, it is proposed to undertake a thorough study of the working of representative industries ranging from economically good to sick ones and find out suitable measures for their effective revival and growth, which has become critical and urgent. This investigation will attempt to identify specific factors like inadequate technological base, insufficient labour and staff training, power shortage etc. responsible for the ills of the industries in the area. A large number of studies have been carried out from time to time to examine, the changes in productivity and its impact on economy, at the national level. Studies have also been carried out to analyse productivity trends in major manufacturing industries in Gujarat. Most of these studies are *generic in nature* and not necessarily *area specific*.

## 3. RATIONALE OF THE RESEARCH STUDY

The Gujarat has always endeavored to remain the forefront of industrial development in India. In order to achieve sustainable economic growth, industrial development is the only option. Therefore, the government of Gujarat announced various policies along with emphasis on the creation of the required infrastructure facilities conducive to rapid industrial development. As it is well known fact that small-scale sector play a vital role in the economic growth of the state as well as the nation, it has become necessary to revive these industries through productivity improvement. With this present scenario, the research study was started with searching for further enhancement of industrial productivity and it is hoped that it will be for the mutual benefit of industry and society. People's wants have always exceeded their means for satisfying them.



The relative scarcity of goods and services has been and will continue to be an economic dilemma that all must face. Some wants cannot be satisfied at all, others can be partially satisfied and a few wants can be fully satisfied. Certain human wants are more predictable than others. The appropriate selection and pursuit of objectives through organized activity, has enabled human beings to satisfy their wants more fully and continually to improve the general standard of living. In those parts of the world where this process is not working well, human wants are poorly met. This is called undeveloped countries. To satisfy human wants and satisfaction, efforts must be made to enhance industrial performance so as to raise living standard of human being by the way achieving higher industrial productivity. Such as:

- The production manager strives to meet production requirements and low cost production.
- The marketing manager seeks to maximize sales and minimize selling expenses.
- The personnel manager strives to level out the fluctuations in the workforce and to retain competent people.

All these aspects deeply inspired for further research in this area specific study. *The proposed study is intended to concentrate on the industrial area around V.U. Nagar with an objective of identifying productivity and economy related problems specific to the area and suggesting ways and means to reduce their ill effects – to prescribe a pill for all ills!!*

#### 4. OBJECTIVES OF THE STUDY

The primary objective of this research study was to know the status of the existing situations and to assess the industrial performance in the context of the changing global industrial scenario of the industrial units of the estate under consideration.

#### 5. RESEARCH METHODOLOGIES

The present study was conducted in industrial estates of Anand district, Gujarat India. The estate was established some times in 1965. At present 1000 odd units are working and more than 25000 jobs are created at different levels. The units were selected from the members' directory published by Vitthal Udyognagar Industries Association (VUIA). 150 Questionnaires were distributed / posted and interviews were conducted. The questionnaires were checked for incompleteness, inconsistent, and ambiguous responses. The questionnaires were discarded with unsatisfactory responses, 22 questionnaires were not included in the sample. Of 150 questionnaires 128 found usable for analysis and have resulted in final sample size. The data were cleaned by identifying out-of-range and logically inconsistent. The responses were considered from usable questionnaires only and responses are 85.33 % which are considered acceptable for the research study and analysis. The data was collected using five point Likert scale highly dissatisfactory (1) to highly satisfactory (5). These data were analyzed using SPSS 17.0 software for the various statistical analysis to draw an appropriate conclusion [1-6].

#### 6. STATISTICAL ANALYSES

SPSS 17.0 software was used to carry out various statistical analyses to evaluate the various aspects which are influencing industrial productivity. Frequency distribution was carried out to know the demographic details. In research survey, there may be a large number of variables, most of which are correlated and which must be reduced to a manageable level. Relationships among sets of many interrelated variables are examined and represented in terms of a few underlying factors. *A factor is an underlying dimension that explains the correlations among a set of variables is called factor (variable).* Factor analysis allows us to look at groups of variables that tend to be correlated to each other and identify underlying dimension that explain the correlations. Relationships among sets of many interrelated variables are examined and represented in terms of a few underlying factors. For these features, factor analysis was performed in this study. One of the most widely used interdependency techniques for data reduction is factor analysis [1-6].

##### Demographic Characteristics

**The respondents:** The number of male respondents in the survey were 123(96.09%) and 5(3.91%) were female respondents. Most of the respondents those participated in the survey were graduates and have educational qualification above it. 5.10 percent of the respondents were Ph.D., 22.40 percent of the respondents were post-graduates, 66 percent of respondents were graduates and the remaining 6.40 percent were undergraduates.

**Respondents' work experience:** The highest work experience 39.70% between 10-20 years, 23.70% between 21-30 years, 23.10% less than 10 years, 12.20% of respondents were above 30 years of experience and only 1.30% respondents were of age group more than 40 years have participated in this study.

**Category of the company:** As mentioned earlier majority units are in small scale. The same thing is reflected over here. In this survey 70.31% (90) are in small scale, 19.53% (25) in medium scale and only 10.16% (13) large scale units have participated and provided relevant data for this research study.

**Sector of the company:** Out of 100% respondents (128 units sample size), 89.20% of units in private sector, 5.10% of public sector, only 0.60% government units, while 5.10% were others have participated and supplied data for the analysis.

**Classification of the industry:** Estate under study was dominated by 68.30 % (87) engineering units; the other classified units were very few in the dedicated sample: 3.80% electrical/electronics, 5.80% paints, varnishes and 3.20% chemicals industries. Remaining miscellaneous units amount 18.90% of the total, have participated in this research study and supplied the relevant data for this study.

**ISO Certificate:** The 25% of respondent industries having ISO Certificates, 75.00% of industries were without ISO Certificates .have participated in this study.

**Man Power:** Out of 128 representative industries and total employees (9921), 97.59% male employees and only 2.41% female employees were in the industries of the sample considered.

**Markets:** Markets scenario shows demands: Indigenous (19.90%), state level (29.50%), national level (23.70%) and international level (26.09%) were recorded of the representative organizations of the sample considered. State level demand observed slightly more compared to national and international demands.

**Technical collaboration:** 82.70% of industries do not have any technical collaboration with third party either nationally or internationally, only 17.30 % industries do have technical collaboration and have responded to the questionnaire for this research study.

**An Index of Reliability:** Cronbach's alpha (Table 1& 2)

Reliability comes to the forefront when variables developed from summated scales are used as predictor components in

objective models. Since summated scales are an assembly of interrelated items designed to measure underlying constructs, it is very important to know whether the same set of items would bring out the same responses if the same questions are re-cast and re-administered to the same respondents. Variables derived from test instruments are declared to be reliable only when they provide stable and reliable responses over a repeated administration of the test. 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 from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = poor, 5 = excellent). The higher the score, the more reliable the generated scale, alpha value 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. If the scale shows poor reliability, then individual items within the scale must be re-examined and modified or completely changed as needed [18].

**Table 1: Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.888	0.887	15

**Table 2: The Cronbach's Alpha ( $\alpha$ ) and Interpretation**

Sr.No.	Cronbach's Alpha	Internal Reliability
1	$\geq 0.90$	Excellent
2	$\geq 0.80$	Good
3	$\geq 0.70$	Acceptable
4	$\geq 0.60$	Questionable
5	$\geq 0.50$	Poor
6	$< 0.50$	Unacceptable

**Table1&2** show that alpha value 0.888 indicates that internal reliability is good and questionnaire is reliable and can be used for statistical analysis.

**Table 3: ANOVA**

	Sum of Squares	df	Mean Square	F	Sig
Between People	693.75	127	5.46	17.39	0.00
Within People	1241.33	1792	0.69		
Total	1935.08	1919			

Grand Mean = 1.8219

**Table 3 ANOVA:** This is the main ANOVA result. The significance value comparing the groups is  $< 0.05$ , so we could reject the null hypothesis (There is no difference in the mean). There is no significant difference between the categories of industries and F (127, 1792) = 17.386, Sig. = 0.00 which is less than 0.05 ( $p < 0.05$ ).



**Table 4: Range and Interpretation of Correlation Coefficient (r)**

Positive	Negative	Correlation -Interpretation
+1.00	-1.00	Perfect
+ 0.75 to +1.00	- 0.75 to - 1.00	Very high
+ 0.50 to + 0.75	-0.50 to - 0.75	High
+0.25 to +0.50	-0.25 to -0.50	Low
+0 to +0.25	-0 to +0 .25	Very low

**Table 5: Correlation Matrix**

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1														
2	1.00**	1													
3	0.49**	0.49**	1												
4	0.55**	0.55**	0.59**	1											
5	0.51**	0.51**	0.51**	0.67**	1										
6	0.47**	0.47**	0.46**	0.65**	0.68**	1									
7	0.33**	0.33**	0.53**	0.53**	0.45**	0.56**	1								
8	0.06	0.06	0.23**	0.30**	0.20*	0.24**	0.29**	1							
9	0.07	0.07	0.26**	0.32**	0.13	0.22*	0.30**	0.86**	1						
10	0.15	0.15	0.21*	0.32**	0.22*	0.27**	0.30**	0.84**	0.86**	1					
11	0.21*	0.21*	0.38**	0.38**	0.34**	0.31**	0.37**	0.48**	0.46**	0.51**	1				
12	0.34**	0.34**	0.42**	0.53**	0.42**	0.55**	0.49**	0.37**	0.37**	0.36**	0.51**	1			
13	0.30**	0.30**	0.38**	0.41**	0.39**	0.41**	0.49**	0.30**	0.29**	0.33**	0.58**	0.71**	1		
14	0.20*	0.20*	0.10	0.19*	0.08	0.23**	0.08	0.08	0.17	0.16	-0.06	0.24**	0.014	1	
15															1

**Table 4&5:** Variable5 (Employees involvement) & Variable1 (Working conditions) have perfect positive correlation (+1) and so on [17]. The values  $r \geq 0.50$  show high to very high correlation among the different contributing variables.

**Table 6: Total Variance Explained**

Factor	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.017	40.111	40.111	6.017	40.111	40.111	3.357	22.380	22.380
2	2.457	16.377	56.488	2.457	16.377	56.488	3.141	20.942	43.322
3	1.887	12.577	69.065	1.887	12.577	69.065	2.957	19.713	63.035
4	1.067	7.116	76.181	1.067	7.116	76.181	1.972	13.146	76.181
5	0.826	5.504	81.685						

Extraction Method: Principal Component Analysis.

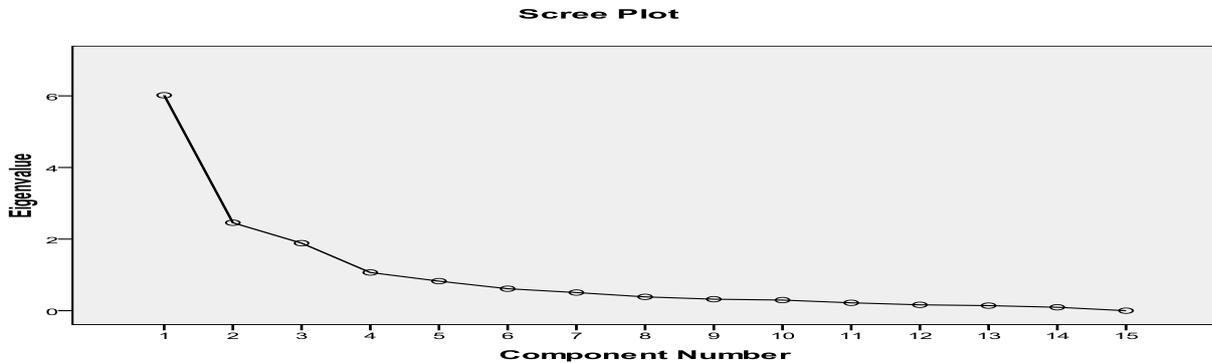


Figure 1: Scree Plot to Identify Number of Factors

Table 6 & Figure1 show that at Eigen value one or more numbers of factors four that total variance explained is 76.181 percent is good for factor analysis. Here Eigen value =1.067 corresponding to four factors and total variance explained =76.181. Scree plot also signifies that scree start at 4 and it shows that total four factor are enough to summaries the total 15 attribute contributing higher industrial performance.

Table 7 Rotated Component Matrix<sup>a</sup>

Factor analysis of Perceptions of stakeholders. Total 15 items measuring perceptions of stakeholders were analyzed using common analysis. Therefore, items that had low loadings were deleted from the scale, and the factor analysis was Performed on the remaining items. This second solution yielded three interpretable factors.

Variables		Factors				Communalities
		1	2	3	4	
6	Strategic directions	<b>0.617</b>				0.65
7	Supervisor’s feedbacks	<b>0.675</b>				<u>0.56</u>
12	Employees’ Involvements	<b>0.802</b>				.076
13	T.& D.- Improve Industrial performance	<b>0.807</b>				0.69
1	Workplace working conditions		<b>0.937</b>			0.91
2	Workplace job security		<b>0.937</b>			0.91
8	Coaching & Training			<b>0.918</b>		0.88
9	Work appreciations			<b>0.927</b>		0.90
10	Work empowerments			<b>0.919</b>		0.90
14	T. & D. - Essential for better job done				<b>0.940</b>	0.90
15	Job stresses negatively affect work.				<b>0.935</b>	0.91
No. of variables associated with factors		<b>04</b>	<b>02</b>	<b>03</b>	<b>02</b>	
3	Workplace teamwork		<u>0.556</u>			<u>0.55</u>
4	Fairly work assignments		<u>0.591</u>			0.68
5	Employees ‘ ideas & opinion		<u>0.588</u>			0.61
11	Employer’s positive feedbacks	<u>0.580</u>				0.62
Total Variance Explained		<b>22.380</b>	<b>43.322</b>	<b>63.035</b>	<b>76.181</b>	
The Eigen value		<b>6.017</b>	<b>2.457</b>	<b>1.887</b>	<b>1.067</b>	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

**Table 8: Factors influencing Industrial Performance: Interpreting Factors**

Factor	Factor name	Variables associated with factors
1	Performance booster	Strategic directions, Supervisor's feedbacks, Employees' Involvements, T. & D. - Improve Industrial performance.
2	Performing environment	Workplace working conditions, Workplace job security.
3	Performing recognition	Coaching & Training, Work appreciations, Work empowerments.
4	Performance measures	T. & D. - Essential for better job done, Job stresses negatively affect work.

**Table 9: Component Transformation Matrix**

Component	1	2	3	4
1	0.667	0.568	0.445	0.186
2	-0.009	-0.586	0.804	-0.103
3	-0.332	-0.005	0.112	0.936
4	0.667	-0.578	-0.378	0.279

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Model Fit:** Extraction Method: Principal Component Analysis. (Tables of Reproduced communalities and Residuals are not shown here).

a. Reproduced communalities, b. Residuals are computed between observed and reproduced correlations. There are 37 (35.0%) non-redundant residuals with absolute values greater than 0.05. The residuals are less than 5 0% and hence model is considered as fit for statistical analysis.

## 7. LIMITATIONS OF THE STUDY

The problems and limitations during this research study were listed as under:

- Non-availability of some secondary data.
- Responses with reservation caused limited co-operation from employees. Top, middle, and lower-levels employees responded differently and might have added little or more bias.
- The postponements of the responses were time consuming and tiresome due to busy schedule or unwillingness to disclose certain information by the respondents.
- The investigator was thought to be industry - agent or government authority in spite of avowal was given, so extracting information was difficult initially, too much time was consumed in convincing them for collecting required data for the purpose of the study.
- The time factors, poor awareness of some respondents were other limitations.
- The supervisors and technicians were scared about the disclosing problems facing at workplace.
- Lower education, language problem and lack of freedom to disclose the facts were major constraints to the most of the bottom level employees.

## 8. SCOPE OF THE PRESENT WORK

The present study in Vitthal Udyognagar, an industrial estate becomes interesting from two points of views. One the Industrial estate is situated between two big educational townships, namely Vallabh Vidhanagar and New Vallabh Vidyanagar, in real sense the hub of world class education in highly competitive environment. Thousands of students are availing these infrastructures for higher studies and research. Secondly, educationalists, technocrats and managers with high skills and micro-small-medium to large scale industries formed a cluster of mutual interest and benefits imparting to the society. Since the establishment of this estate it was a demand as to time to study and evaluate the existing scenario and its potentiality to enhance further improvement in industrial performance leading to higher industrial productivity help improving living standard of people. There is lot of scope for further study and future research in this area of interest of industrial productivity and potentiality.

## 9. CONCLUSIONS

The study mainly focused on finding out the impacts of various attributes in the era of globalization. It is interesting



to know that almost everybody in the opinion that globalization has changed the present industrial scenario, and it is the demand of the day. The set attributes regarding employees and employers relationships and incentives for better performance and recognition of the individual, working conditions, job security, job stresses all attributes have their own effect on the industrial performance. The four factors uncover the associations of the 15 variables. These factors contribute to higher industrial performance leading to higher productivity of the organization. This confirms the perceptions of the stakeholders about better industrial performance.

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