Annexure-I
(Refer Chapter-6 Page No.-160,179-242)

Questionnaire-1: A study of industrial productivity scenario and potentiality.

[A] Personal Information (Respondent)
1. Name of the Respondent: ............................................................... (Optional)
   • Name of the Organization: ....................................................
   • Department: .................................................................
   • Designation: .................................................................
   • Phone No.: .................................................................
   • Signature: ................................................................. (Optional)

3. Sex:   □ Male   □ Female
4. Education: □ Other   □ Trade School   □ Diploma
   □ Bachelor Degree   □ Master Degree   □ Ph.D.
5. Professional status: □ Proprietor   □ Partner   □ Managerial
   □ Professional   □ Technicians   □ Other
6. Income range (Annual): Rs.
   □ Less than 150000   □ 150000-300000   □ 300000-500000   □ More than 500000
7. Professional experience : (Years)
   □ Less than 10   □ 11-20   □ 21-30   □ 31-40   □ More than 40

[B] Organization’s Profile
1. Name & Address of the company: --------------------------------------------
2. Constitution of the company:
   □ Proprietorship   □ Partnership   □ Private
   □ Public Ltd. Co.   □ Other pl. specify _____________
3. Category of the Industry/company:
   □ Small Scale   □ Medium Scale   □ Large Scale
4. Sector: □ Private   □ Public   □ Government   □ other pl. specify _____
5. Classification of industry:

   1. Engineering, Foundry, Fabrication, Machining
   2. Electricals / Electronics
   3. Paints ,Varnishes, Resins
   4. Chemicals
   5. Miscellaneous
6. Standards followed :
   □ IS   □ BS   □ DIN   □ JIS   □ GOST
7. ISO certification: □ Yes □ No

8. Manpower: Men: [ ] + Women: [ ] = Total [ ]


10. Technical collaboration: □ Yes □ No

[C] Job satisfaction: Do you agree that various aspects of job satisfaction lead to higher productivity?

Please indicate your level of agreement with each of the following statements:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Details</th>
<th>Very Satisfied (05)</th>
<th>Somewhat Satisfied (04)</th>
<th>Neutral (03)</th>
<th>Somewhat dissatisfied (02)</th>
<th>Very dissatisfied (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fringe benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Frequency and Amount of Bonus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Link between Pay and Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Security and administration (Stock options/ pensions plans)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Work load</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Flexibility of work hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Flexibility times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Physical working environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Opportunity for advancement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Job security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Opportunity to use new technologies</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13</td>
<td>Recognition received from your superiors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Your overall relationship with superiors.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

[D] Present Infrastructure Scenario: Do you agree that present infrastructure is satisfactory which help improve industrial productivity?

Please indicate your level of agreement with each of the following statements:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Details</th>
<th>Excellent (05)</th>
<th>Good (04)</th>
<th>Satisfactory (03)</th>
<th>Average (02)</th>
<th>Poor (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Physical Infrastructures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Land: availability for industrial development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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2. Land: availability for Large-scale future expansion

3. Water: availability for industrial purpose

4. Power: availability for industrial requirements

5. Rawmaterials: availability of raw materials

6. Manpower: availability of skilled/technical manpower

7. Transport: availability for industrial use
   i) Railways, ii) Roads
   iii) Air Transport

8. ITI: Industrial Trade Training facilities

9. Education: Educational facilities

10. Shelter: Housing facilities

11. Healthcare: Medical facilities, Hospitals etc.

12. Climate: Climatic/ Environmental conditions

II Social Infrastructure

13. Entrepreneurship: Centre of Entrepreneurship

14. Markets: Potentialities /Proximity of market

15. Lending Institutions: availability of finance, banks, financial institutions etc.

16. Human attitude: Whether people wants business / industries

III Helping hands to Entrepreneurs/ Industrialists

17. GIDC: Gujarat Industrial Development Corpon.

18. GIIC: Gujarat Industrial Investment Corpon.

19. GSIC: Gujarat Small Industrial Corporn.

20. GSFC: Gujarat State Financial Corpn.

21. GIDB: Gujarat Infrastructure Development Board

22. INDEXTb: Industrial Extension Bureau

23. Industries Commissionerate

24. DIC: District Industries Centre

25. National Industry Policy

26. State Industry Policy

27. Association: VUIA: Vithal Udyognagar Industries Association
[E] Target Market Criteria: Do you agree that the good market criterion leads to higher productivity?

Please rank the order of importance of the following criteria to your target market.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Details</th>
<th>Very Important (03)</th>
<th>Important (02)</th>
<th>Not Important (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Price</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Quality of Products or services</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Brand name recognition</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td>Customer / Technical service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Broad Array of Service (Chain of service centers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Friendly staff attitude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Discounts on sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Attractiveness of packaging</td>
<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>Convenience of store location</td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>Store appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Convenience of produce/ service use</td>
<td></td>
<td></td>
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<tr>
<td>12.</td>
<td>Guarantees / Warranties</td>
<td></td>
<td></td>
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<tr>
<td>13.</td>
<td>Fast growing/adopting new ideas</td>
<td></td>
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<tr>
<td>14.</td>
<td>Flexible payment terms</td>
<td></td>
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</tr>
</tbody>
</table>

[F] Globalization and Competitiveness: Do you confirm that productivity has increased due to globalization and high competitiveness?

Kindly go through the statements given below and state your level of agreement.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Statement</th>
<th>Strongly agree (05)</th>
<th>Agree (04)</th>
<th>Neutral (03)</th>
<th>Disagree (02)</th>
<th>Strongly disagree (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Globalization has changed industrial scenario and it’s a demand of the day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Job opportunities, productivity and living standards have increased due to globalization</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Liberalization has improved industrial performance and competitiveness</td>
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<tr>
<td>4.</td>
<td>Privatization are very essential to improve industrial performance in competitive world</td>
<td></td>
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</tr>
<tr>
<td>5.</td>
<td>ISO certification helps improve company’s image</td>
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<tr>
<td>6.</td>
<td>ISO certification helps increase exports, profit, turnover, expectations of the company</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7.</td>
<td>ISO certification helps increase productivity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
[G] DOWN SIZING (Voluntary Retirement Schemes): Do you agree that VRS helps increase performance and hence productivity of the organization?

Please indicate your level of agreement with the following statements.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Statement</th>
<th>Yes (03)</th>
<th>Not sure (02)</th>
<th>No (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Every Organization should follow Downsizing, reducing manpower in the present context of highly advanced technological scenario?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Every company should offer, Early Separation Schemes (ESS) to improve industrial performance / productivity?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[H] Quality Introspect: In the context of improving productivity rank the following questions.

Please indicate your level of agreement of the following.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Statement</th>
<th>Yes (03)</th>
<th>Not Sure (02)</th>
<th>No (01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 1.</td>
<td>Does your company follow quality concepts for the improvements?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>KAIZEN Philosophy: Continuous improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The 5S Philosophy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Six Sigma Philosophy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Taguchi’s Philosophy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>TQM Philosophy: Total Quality Management</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7.</td>
<td>TPM Philosophy: Total Productive Maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II 1.</td>
<td>Does your company follow inventory control techniques?</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>ABC classifications</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9.</td>
<td>Inventory models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>None: Only by experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III 1.</td>
<td>Does your company follow standard models for productivity improvement?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Quality Improvements : Models / Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Industrial Engineering : Models/ Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV 1.</td>
<td>Does your company have incentive schemes for motivating workers of the organization?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Wage incentive plans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Quality Performance Awards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Mementos, Certificates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Pay- Performance link benefits / bonus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[I] Additional Information: .........................................................................................................................

[J] Reaction and Response:

-----------------------------------------------------------------------------------------------Thanks-----------------------------------------------------------------------------------------------
Annexure-II

(Refer Chapter-6 Page No.-160,242-258)

**Questionnaire-2**: (Executives, Officers and Staff): A study of employees’ motivation, morale, job satisfaction and productivity

----------------------------------------------------------------------------------------------------
1. Name of the Respondent: __________________________________________________________ (Optional)
2. Name of the Organization: __________________________________________________________
3. Department : ______________________________________________________________________
4. Designation : _____________________________________________________________________
5. Signature : ________________________________________________________________________ (Optional)

Kindly put (✓) mark in appropriate box.

1. You feel proud to be associated with this organization.
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

2. You feel that your job is secured in the organization. (Job security)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

3. Your salary does not match with your work demand and Industry standards. (Remuneration satisfaction)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

4. You are satisfied with past and present rewards. (Reward mechanism)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

5. You think that there are no chances of promotion. (Performance appraisal)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

6. You are aware of organizational objectives. (Vision/Mission clarity)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

7. You are not clear about what is expected from you in the organization. (Role ambiguity)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

8. You receive meaningful work assignments.
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

9. You get enough cooperation from your workers / supervisors. (Superior – Subordinate relation)
   - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree

10. You get enough cooperation from your superiors / managers. (Cooperative environment)
    - [ ] Strongly agree [ ] Agree [ ] Not sure [ ] Disagree [ ] Strongly disagree
11. You are not involved in decision making process.
   (Participative management)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

12. You don’t have right amount of interaction with superiors.
   (Interpersonal communication)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

13. You are satisfied with working conditions in your department.
   (Work environment)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

14. You are fully aware about housekeeping needs in your workplace.
   (Housekeeping)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

15. You think that housekeeping is a moral responsibility of employees.
   (Housekeeping)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

16. You think that teamwork is prevailing in your department. (Team work)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

17. You think that training is necessary (Training & Development).
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

18. You think that job rotation is necessary. (Job rotation)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

19. You think that productivity should be increased. (Productivity improvement)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

20. You are satisfied with management policies and rules. (Management policy)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

21. You are satisfied with organizational Culture. (Work culture)
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

22. Training and Development programme arranged in organization helps
    employee productivity
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

23. Overall, Industrial productivity increases, decreases waste, decreases unproductive
time and increases employee morale, motivation, earning.
   ☐ Strongly agree ☐ Agree ☐ Not sure ☐ Disagree ☐ Strongly disagree

Respondent: ------------------------                            Department: -------------------------
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--------------------------------------------------
--------------------------------------------------
Thanks--------------------------------------------------

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Annexure-III
(Refer Chapter-6 Page No.-160,258-267)

Questionnaire-3: (Workers): A study of workers’ motivation, morale, job satisfaction and productivity

1. Name of the Respondent: __________________________________________ (Optional)
2. Name of the Organization: __________________________________________
3. Designation: _______________________________________________________
4. Department: _______________________________________________________
5. Signature: _________________________________________________________ (Optional)

Kindly put (√) mark in appropriate box

1. You feel proud to be associated with this organization.
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

2. You receive enough help and equipment to get the job done.
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

3. You get proper instructions and directions from your superiors.
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

4. You feel that your job is secured in the organization. (Job security)
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

5. You are getting good wages / salary. (Remuneration satisfaction)
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

6. You are satisfied with past and present rewards. (Reward mechanism)
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

7. Your work is interesting. (Employee knowledge and skill utilization)
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

8. You are satisfied with working hours.
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

9. You are satisfied with working conditions in your department.
   (Work environment)
   □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

10. You think that housekeeping is a moral responsibility of all Employees.
    (Housekeeping)
    □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

11. You are fully aware about housekeeping needs in your workplace.
    □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree

12. You are not clear about your role in organization. (Role ambiguity)
    □ Strongly agree □ Agree □ Not sure □ Disagree □ Strongly disagree
13. You are not aware about organizational objectives. (Vision/Mission)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

14. You get enough cooperation from your co-workers (Superior-Sub ordinate relation)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

15. You think that communication gap is prevailing. (Interpersonal communication)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

16. You think that there are no chances of promotion.  
(Performance appraisal)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

17. You think that teamwork is prevailing in your department.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

18. You think that training is necessary. (Training & Development)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

19. You think that job Rotation is necessary. (Job rotation)  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

20. You are satisfied with management policies and rules.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

21. You think that productivity should be increased.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

22. You are satisfied with organizational culture.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

23. Work load: Job stress: (Stress lead to dis-satisfaction and quitting)  
☐ Extreme  ☐ Severe  ☐ Not sure  ☐ Moderate  ☐ Mild

24. Work hours: Job stress: (Stress lead to dis-satisfaction and quitting)  
☐ Extreme  ☐ Severe  ☐ Not sure  ☐ Moderate  ☐ Mild

25. Work times/shifts: Job stress: (Stress lead to dis-satisfaction and quitting)  
☐ Extreme  ☐ Severe  ☐ Not sure  ☐ Moderate  ☐ Mild

26. Training and Development program arranged in organization helps increase employee productivity.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

27. Overall, Industrial productivity increases, decreases waste, decreases Unproductive time and increases employee morale, motivation, earning.  
☐ Strongly agree  ☐ Agree  ☐ Not sure  ☐ Disagree  ☐ Strongly disagree

Respondent -------------------------------- Department-----------------------------------

-----------------------------------------------

Thanks --------------------------------------
Annexure - IV

Six Sigma killing Innovation!

It’s one of the most ultimate management jargons of all time, thanks to its initiative by Motorola and subsequent promotion by Jack Welch! But over the turn of the century, companies that swore by this concept have been caught in a void.

Is the practice worth it anymore?

Six Sigma was advertized to have been Welch’s Jedi weapon in this booming progress, a claim that led to Six Sigma concept getting popularized globally to legendary levels, and even led companies like Motorola (the pioneers of the concept) to attain iconic cult status amongst Six Sigma revolutionary specifically and in the global management world in general. To its credit, Six Sigma did benefit Motorola to a large extent-at least initially. When one of Motorola’s Quasar TV set producing factories was acquired by a Japanese company in 1970, the former saw dramatic changes under the Japanese management, in that the defects were lowered by 95% and costs were down as well.

Motorola’s then Chairman & CEO Robert Galvin was plan by the Japanese firm’s eccentric and fanatic orientation towards reducing defects, and after an exhaustive analysis, decided to make Motorola take the full plunge in implementing Six Sigma!

Bill Smith, popularized as the father of Six Sigma, would never have imagined that his formulation—which talked about reducing defects to less than 3.4 per million in the 1990s as it did. Many more companies were adopting Six Sigma. After GE adopted Six Sigma, it seemed Six Sigma possibly could not go wrong.

A huge 91% of companies adopting Six Sigma trailed the S&P 500!

And then suddenly, the house collapsed in one go! And one after the other, Six Sigma practicing firms started churning out pitiable performances and business results. While initially, theorist blamed disconnected factors, over time, the coincidences became too hard to ignore statistically. Bob Nardelli was responsible for implementing Six Sigma at Home Depot fanatically!

What went wrong?

Vijay Govindarajan, Professor of International Business at Tuck School of Business, comments to B&E, “Six Sigma is about continuous improvement whereas radical innovation is discontinuous change.

So they conflict.” Eugene C. Reyes, VP-Business Development North America, BPO International, Inc. gives mocking analysis of the concept to B&E, “Six Sigma, TQM, and even ISOs can suffocate areas of business where innovation is key.” Quality has its merit, but can have a self-limiting effect when it comes to innovation.

Then how did Jack Welch succeed in implementing Six Sigma and ensuring fantastic success for GE (earning grew 13% in just two years of implementation)? That was because Jack, despite targeting outstanding improvement in quality, was never keen about achieving the “3.4 defects per million” impossible target. His prime rule for any manager implementing Six Sigma was that the manager should “understand Six Sigma is all about customers winning in their market place and GE’s bottom line.”

Six Sigma is on a sure path to silent desire demise!

In other words, Jack cancelled any Six Sigma programs that had a chance of eating into the earning-Six Sigma should just be selectively applied, were his key words in the Welch Way. Strangely, CEOs of most other Six Sigma companies never realized this necessary connection: as a matter of fact, Jack Welch never let them on to it since very end of his tenure. But empirical evidence cannot be ignored, and as much as we may not want it, Six Sigma is on a sure path to silent desire demise.

Dr. Chris Trimble of Tuck School of Business to B&E, “The solution is not to kill six sigma, but to create ‘safe havens’ where a company can pursue disciplined experiments- while simultaneously striving for excellence in day-to-day business.”

* Source: Ashutosh Harbola, Six sigma Critique, Business & Economy, Vol.5, Issue: XXI, 6 August-19 August 2010, pp34-35. He joined Crysler (which too collapsed), and got kicked out again. Same has been the case with other Six Sigma firms like Honeywell, 3M, Lockheed, Ford and Xerox.
Annexure V

Ten ways to improve manufacturing productivity

Manufacturing performance and production analysis improves productivity with full production machine data collection systems. Maximizing productivity is a never-ending task for most freelancers. There’s always some way that we can improve on some area that’s lacking the attention it deserves. The 10 ways to improve manufacturing productivity are:

1) **Analyze causes for downtime and rejects**: Record and analyze machine downtime and reject events to minimize interruptions and poor productivity.

2) **Monitor machines in real time**: Detect problems before productivity and quality suffers: see real-time displays of efficiency, utilization, OEE, yield, rate, cycle time.

3) **Automate production reporting**: Implement automated production data collection and reporting from all types of production machines. Print standard and custom reports automatically and export data to Excel, 1-2-3 or your Enterprise systems.

4) **Automate production scheduling, job tracking**: Reduce time-consuming manual production scheduling and job tracking chores to just a few clicks of a mouse.

5) **Schedule P.M. based on actual machine/tool use**: Don’t wait for your machinery to break or produce scrap before you perform maintenance. Instead, be proactive: schedule Preventive Maintenance based on actual machine/tool/component usage: run hours and cycle count.

6) **Analyze manufacturing process variable performance**: Monitor temperature, pressure, cushion, shot size, stroke, shut height, tonnage, inject/fill/hold time, etc. Chart as X bar and R or export it to SQC/SPC applications.

7) **Implement OEE/ISO/Continuous Improvement programs**: Develop real-world production standards to make your job costing accurate. Implement activity based costing, Continuous Improvement and OEE programs.

8) **Manufacturing data collection for ERP, MES, and CMMS systems**: Close the loop with your enterprise systems: Automatically download production schedules into System's Job Queue, then upload production/performance/productivity and usage data at Shift and Job end.

9) **Export cycle counts and run time to CMMS systems**: Eliminate manual "meter" reading and data collection: Production ACE can export actual runtime and cycle counts to any third-party CMMS/EAM software during the production shift: cycle counts and runtime "meters" are updated in a real-time file.

10) **Read and Print Bar Code labels at each machine as parts are made**: Printed labels can contain your choice of information such as Product Description, Work Order, Operator Name, Date/Time, Lot Number, etc.

**Top Comments:**

- Monitoring does not improve productivity but actions generated from such data give you guideline where to act. Also extend and method of implementation depends on Business.

- Suggestion is POKA YOKE to be introduced in the process to avoid the rejections, which will improve the productivity.

- Implementation of any technique will be complete only when there is a mutual involvement of the implementer as well as the end user of the implemented process. If the end user is interested in the technique that we implement (May be a small improvement or a total change in system), the implementation will be a full success. Even there is any bottleneck in the implementation the end user

* Source: Isha Verma, Sales/BD Manager, Larsen & Toubro, 10 ways to improve manufacturing productivity
will give suggestion in improving the implementation part and making it a practical implementation. So the first thing an implementer should do is clear the initial resistance to change creating awareness on the benefits and by proper training.

- Yes points are valid enough to enhance productivity, but implementation part? The man who works actually in the process will have a final say for any positive result. Management will certainly implement all these things at least in the view of any system audits but will it give any results instantly is a question to know the real capacity losses/time which may be useful. Lastly, unless there is a flexible workforce in any industry, these things will not have any early returns.

- Definitely its worth to consider lean but ultimately it’s a one piece flow which have its own bottlenecks. Lean provides excellent systematic productivity improvement and it creates culture which is much better than just few actions. Sustenance of productivity through Lean is better than those suggested as they are evolved by user team.

- What points have been mentioned may be true for particular production line however does not have state-of-art flavor. Use of Lean tools provides productivity improvement for all the industries and businesses. Adding value and elimination of waste will improve productivity.

The followings points should be considered for Productivity Improvement:

1. Have multi-skilled production team to meet fluctuating customer demand and tackling absenteeism.
2. Have small batches preferably single piece flow and take time production. Reduce distances.
4. Use quality tools. Quality issue-Prevent defect going to customer first by segregation (Correction), then quickly modify process so that defect does not arise (corrective action), deploy solution at all places where applicable (Preventive action). Prefer quality by process over quality by human skills.
5. Introduce measurements for productivity measurements. Cycle Time, first pass yield, Overall Equipment availability rate etc. Initiate actions when variations are observed to fix issues.
6. Have Total Productive Maintenance to improve cycle time and equipment availability rate. Use of Poke-Yoke.
7. Have visual signals, POKE YOKE, Kaizen etc. These can be adopted by any one at low cost.

Predictive maintenance is also to be added in this. Implement productivity enhancements methods like value engineering, TQM. In India Indian Society of Value Engineering (INVEST) helps to implement Value Engineering practices. Apart from those valid points, need to take up preventive maintenance as a culture instead of attending to breakdowns at the last moment.

Conclusion: For improving manufacturing productivity to add one more point to it. Productivity solutions, for predicting performance and results in turning, in today’s machine shops, productivity factors usually go hand in hand and many look towards achieving as much as possible in respect to all of them. Continual lowering of production costs is a priority for maintaining competitiveness whatever the type of manufacturing by making sure the machine shop has access to the best tools and services, one is making sure of maximizing the manufacturing potential through:

1. Output and quality being maximized,
2. Turning performance and security being optimized,
3. Tools selected and applied being fewer and better and
4. Tool inventory and handling being minimized.
Annexure-VI

How to Increase Industrial Productivity & Be 100% Effective at Work

How to Increase Industrial Productivity:

Industrial productivity is at the heart of cost control and product marketability. To increase industrial productivity you must take into account several diverse considerations in order to ensure your company is working at maximum efficiency. A productive company is ultimately a profitable one, and you should never underestimate the powerful growth that can follow as a result.

**Step1:** Make sure the work environment is up to date on all safety requirements. To carefully increasing industrial productivity you must make certain the work environment is safe and secure.

**Step2:** Make certain that all equipment is properly maintained and capable of working for long periods of time without needing corrective maintenance. Industrial productivity is largely controlled by machinery and computers.

**Step3:** Design a worker friendly plan for vacation and break time. Having content workers helps increase industrial productivity.

**Step4:** Allow workers certain benefit options that allow them to invest in the company. A worker who has a vested interest in the performance of the business will consistently work to increase industrial productivity.

**Step5:** Plan team-building exercises so that your workers function as an organic unit. This stimulates a more creative and dynamic work force capable of solving a number of unforeseeable productivity concerns.

**Step6:** Remember that your most important resource is your human resource. Having a group of people who are eager to improve their own abilities will improve the abilities and productivity of the company itself.

How to Be 100% Effective at Work:

1. Learn to be a team player, need to start working and acting like a team player, do not always take very important decision alone, involve as many of colleagues as possible. Being a team player helps avoid making very big mistakes, which could put decision maker’s competence and capabilities into question. *This help gets the task done faster and better.*

2. Try to be has friendly and open as possible, to ease up and share some personal and cordial talks with colleagues, a little 5-10mins talk before resuming to can help kick start a very effective working day, take time to ask about the feelings and wellbeing of partners before setting out to work. *This action helps diffuse every form of tension or problems that might have come with you to work from home.*

3. Endeavour not to carry over bag loads of work to the next day, work that should be done that day must be done, never form the habit of transferring files, urgent documents and very important things into a new working day, this makes confusion, disorganization, tension and pressure to set in, with all this might not be able to perform up to 100% through out that week.. *A file, or message that comes or passes your desk for approval, editing and assessment should be attended to immediately, clear flow of work around the office, if all these are avoided, you will be the best at what you do.*

4. Always maintain a good, cordial and formal relationship with your boss, or if you are the boss, be as humble, accessible and disciplined as possible with your workers. There is no way you can do your best when you keep having issues with your boss, the more you quarrel the harder the work gets, and the lower your performance becomes in work.

5. To be 100% effective at work, there are some relationships that are not healthy and must be avoided, every relationship or friendship must be platonic, formal, casual and professional, this helps your mind to be focused and not divided at work. Emotional, physical, sexual and soulful relationship should be avoided, you must see everyone as your colleague, team mate and co-workers, so whatever association that will make you compromise your integrity, belief and ideology should be far away from work, cause if not you being too subjective in some very important decisions and steps you take at work, which could affect your work out put seriously.

6. Never work yourself into been a workaholic, though it is good to work but it is very risky not to find time to rest, relax and unwind, ease off pressure, let your soul and body be free at available opportunity, in case you do not know, you are more effective and resourceful after a good rest. Note to much work without rest could result to depression and when depressed you perform below 50% of your best.

7. Be creative and unorthodox with your work, carry out researches, discover new tricks, methods or approach to doing your work better be, ready to learn, be observant and be smart with all of these, you are just a step from reaching your best.


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