Please provide a response to each question based on a single manufacturing plant. If you do not know the answer to a question or if a question does not apply or is unclear, simply leave that answer blank. **Deadline: July 13, 2007.** Your responses are anonymous.

### PLANT PROFILE

1. **Please indicate if this plant is part of a public or private company:** (check one)  
   - [ ] Public  
   - [ ] Private

2. **In which state is the plant located?** ___________________________

3. **What is the nature of manufacturing operations for primary products at this plant?** (check one)  
   - [ ] Discrete (measured by numeric quantities)  
   - [ ] Process (measured by weight or volume)  
   - [ ] Both or hybrid

4. **What is the primary product that this plant produces (e.g., axles, software)?** ________________________________

5. **How many years has it been since plant start-up?** (check one)  
   - [ ] Less than 5 years  
   - [ ] 5 - 10 years  
   - [ ] 11 - 20 years  
   - [ ] More than 20 years

6. **In which of the following industry value chains does this plant primarily participate?** (check one)  
   - [ ] Aerospace  
   - [ ] Automotive  
   - [ ] Chemicals  
   - [ ] Construction  
   - [ ] Consumer packaged goods/nondurables  
   - [ ] Consumer product durables  
   - [ ] Industrial equipment and machinery  
   - [ ] Pharmaceuticals, biotechnology, medical  
   - [ ] Printing and publishing  
   - [ ] Defense industry  
   - [ ] None of the above

7. **Which criterion below best describes the volume and product mix of your plant's operations?** (check one)  
   - [ ] High volume/High mix  
   - [ ] High volume/Low mix  
   - [ ] Low volume/High mix  
   - [ ] Low volume/Low mix

8. **What was the approximate annual revenue of the plant’s corporate parent in 2006?**  
   (independently owned facilities should respond for the entire company) .................... _______________________________

9. **What was the approximate annual revenue of this plant in 2006?**  
   (if plant is a cost center, please report as the value of shipments) .................... _______________________________

10. **How do you anticipate plant revenue changing in 2007 vs. 2006?** (check one)  
    - [ ] Decreased more than 20%  
    - [ ] Decreased 11 - 20%  
    - [ ] Decreased 1 - 10%  
    - [ ] Stayed the same  
    - [ ] Increased 1 - 10%  
    - [ ] Increased 11 - 20%  
    - [ ] Increased more than 20%

### HUMAN RESOURCES

11. **Approximately how many employees (all staff) are at this plant location?** ...... _______________________________

12. **How do you anticipate employment levels changing in 2007 vs. 2006?** (check one)  
    - [ ] Decrease more than 20%  
    - [ ] Decrease 11 - 20%  
    - [ ] Decrease 1 - 10%  
    - [ ] Stay the same  
    - [ ] Increase 1 - 10%  
    - [ ] Increase 11 - 20%  
    - [ ] Increase more than 20%

13. **What percentage of plant production workers are represented by a union(s)?** (check one)  
    - [ ] 0%  
    - [ ] 1 - 25%  
    - [ ] 26 - 50%  
    - [ ] 51 - 75%  
    - [ ] 76 - 99%  
    - [ ] 100%

14. **What is the plant’s annual labor turnover rate for the most recent year?**  
    (number of voluntary and involuntary separations ÷ typical staffing level) ............................................................. _______ %

15. **What percentage of production employees participate in empowered or self-directed work teams?**  
    - [ ] 0%  
    - [ ] 1 - 25%  
    - [ ] 26 - 50%  
    - [ ] 51 - 75%  
    - [ ] 76 - 99%  
    - [ ] 100%

16. **What is the approximate average wage for production employees?** (hourly rate without overtime) ..........$_________

17. **What is the approximate starting wage for production employees?** (hourly rate without overtime) ..........$_________

18. **What are the average annual hours of formal training received by each plant employee?** (check one)  
    - [ ] Less than 8 hours  
    - [ ] 8 - 20 hours  
    - [ ] 21 - 40 hours  
    - [ ] More than 40 hours

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19. What types of plant training is typically offered to production employees? (indicate % for each category)  
   a. Technical job-specific training % 308  
   b. Improvement methods % 307  
   c. Teaming/employee interaction % 308  
   d. Corporate policies % 309  
   e. Other % 310  
   Total = 100%  

20. Which of the following human-resource practices/programs are used at this plant? (check all that apply)  
   31. Formal employee training program  
   32. Leader/supervisor development  
   33. Paid sick and/or personal days  
   34. Annual review and raise program  
   35. Bonus plan  
   36. Apprenticeship program  
   37. Recruiting and hiring program  
   38. Formal safety/health program  
   39. Employee-ownership options  
   40. Education reimbursements  
   41. Teaming/team-building practices  
   42. Paid medical benefits  
   43. Paid vacation days  
   44. Profit or revenue-sharing plan  
   45. None of these  

21. Please select the top three objectives that best describe the focus of your market strategy: (check three)  
   11. Low cost  
   12. Innovation  
   13. Service and support  
   14. Product value  
   15. Total value  
   16. None of these  

22. Please indicate which of the following improvement methodologies are followed at the plant: (check all that apply)  
   32. Agile Manufacturing  
   33. Lean Manufacturing  
   34. Theory of Constraints  
   35. Toyota Production System  
   36. Other methodology(s)  
   37. No methodology  

23. What percentage of plant processes have been addressed with improvement methodology(ies)?  

24. In which departments has your improvement methodology(ies) been implemented? (check all that apply)  
   12. Production  
   13. Finance and accounting  
   14. Customer relations  
   15. Administration  
   16. Shipping and logistics  
   17. Engineering  
   18. Supplier relations  
   19. Other  
   20. Materials management  
   21. Purchasing  
   22. Research and development  
   23. None of these  

25. How has your improvement methodology(ies) affected plant financial performance (i.e., profitability)? (check one)  
   34. Major increase  
   35. Some increase  
   36. No change  
   37. Some decrease  
   38. Major decrease  

26. Which of these programs and/or practices occur at this plant? (check all that apply)  
   13. Benchmarking  
   14. Total productive maintenance  
   15. Quality certifications (e.g. ISO)  
   16. Continuous-improvement program  
   17. Environmental management  
   18. Energy management  
   19. Customer-satisfaction surveys  
   20. Open-book management  
   21. Supplier-management program  
   22. Recycling/reuse programs  
   23. Strategy/policy deployment  
   24. Quick changeovers/SMED  
   25. Value-stream mapping  
   26. Kaizen events/blitzes  
   27. None of these  

27. How much progress has the plant made toward achieving world-class manufacturing status? (check one)  
   40. No progress  
   41. Some progress  
   42. Significant progress  
   43. Fully achieved  

28. How has total production output (unit volume) changed in the past 12 months? (check one)  
   146. Decreased more than 20%  
   147. Decreased 11 - 20%  
   148. Decreased 1 - 10%  
   149. Decreased more than 10%  
   150. Increased 1 - 10%  
   151. Increased 11 - 20%  
   152. Increased more than 20%  
   153. Stayed the same  

29. What are the plant's costs as a percentage of costs of goods sold (COGS)? (indicate % for each category)  
   a. Labor % 41  
   b. Overhead % 42  
   c. Material % 43  
   Total COGS = 100%  

30. What is the plant's cost of goods sold as a percent of plant revenue? (annual COGS ÷ annual revenue) .... % 44  

31. What are the approximate sales per employee for the most recent fiscal year? (include all employees, not just direct labor)  
   $_______ per employee 60  

32. How have sales per employee changed in the past year? (check one)  
   149. Decreased more than 10%  
   150. Decreased 6 - 10%  
   151. Decreased 1 - 5%  
   152. Increased 1 - 5%  
   153. Decreased more than 10%  
   154. Increased 6 - 10%  
   155. Increased more than 20%  
   156. Stayed the same  

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33. How have per-unit manufacturing costs, excluding purchased materials, changed in the last 3 years? (check one) 
- Decreased more than 20%  
- Decreased 11 - 20%  
- Decreased 1 - 10%  
- Stayed the same  
- Increased 1 - 10%  
- Increased 11 - 20%  
- Increased more than 20%  

34. Please estimate the following operation/production measures for your plant:  

<table>
<thead>
<tr>
<th>Measures</th>
<th>Current Year</th>
<th>3 Years Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Manufacturing cycle time (start of plant production to completion of primary product)</td>
<td>hrs 49</td>
<td>hrs 174</td>
</tr>
<tr>
<td>b. Customer order lead time (order-entry through production to ship for specific product)</td>
<td>days 51</td>
<td>days 178</td>
</tr>
<tr>
<td>c. On-time delivery rate (% of goods delivered on time)</td>
<td>% 52</td>
<td>% 146</td>
</tr>
<tr>
<td>d. Finished-product first-pass quality yield (% of product that passes final inspection)</td>
<td>% 46</td>
<td>% 147</td>
</tr>
<tr>
<td>e. Scrap and rework (as % of plant sales)</td>
<td>% 178</td>
<td>% 179</td>
</tr>
<tr>
<td>f. Warranty costs (as % of plant sales)</td>
<td>% 178</td>
<td>% 179</td>
</tr>
</tbody>
</table>

35. Which of the following practices are used to manage inventory? (check all that apply)  
- One-piece flow techniques  
- Pull systems with kanban signals  
- Quick equipment changeovers  
- RFID and computerized inventory tracking  
- Parts/goods supermarkets  
- Vendor-managed or -owned inventories  
- Production leveling/heijunka  
- None of these  

36. What are the plant’s inventory turn rates for the following categories of material?  
(If your plant has no inventory for a category — i.e., directly ships finished goods to customers — report as 365 turns)  

<table>
<thead>
<tr>
<th>Material</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Raw material</td>
<td>(annual COGS ÷ average value of raw material on hand) turns per year 55</td>
</tr>
<tr>
<td>b. Work-in-process material</td>
<td>(annual COGS ÷ average value of WIP on hand) turns per year 56</td>
</tr>
<tr>
<td>c. Finished goods</td>
<td>(annual COGS ÷ average value of finished goods on hand) turns per year 57</td>
</tr>
<tr>
<td>d. Total inventory</td>
<td>(annual COGS ÷ average value of total inventory on hand) turns per year 58</td>
</tr>
</tbody>
</table>

37. Approximately what percentage of the plant’s total inventory is obsolete? ………………………………………….. % 341  

38. How has the total inventory turn rate changed in the last three years? (check one)  
- Decreased more than 20%  
- Decreased 11 - 20%  
- Decreased 1 - 10%  
- Stayed the same  
- Increased 1 - 10%  
- Increased 11 - 20%  
- Increased more than 20%  

39. Where does this plant directly ship its products? (check all that apply)  
- Your company’s plant(s)  
- Other manufacturer’s plant(s)  
- Direct to end customer (business)  
- Other  
- Your company’s distribution center(s)  
- Other manufacturer’s distribution center(s)  
- Direct to end customer (consumer)  
- None of these  
- Wholesaler/distributor(s)  
- Retailer(s)  
- Government  

40. How has the price for primary products (per unit) charged to customers changed in the past year? (check one)  
- Decreased more than 20%  
- Decreased 11 - 20%  
- Decreased 1 - 10%  
- Stayed the same  
- Increased 1 - 5%  
- Increased 6 - 10%  
- Increased more than 10%  

41. Indicate to what degree operations are integrated with: (check one for each row)  

<table>
<thead>
<tr>
<th>Operations</th>
<th>No integration</th>
<th>Some integration</th>
<th>Extensive integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Suppliers</td>
<td>69</td>
<td>70</td>
<td>71</td>
</tr>
<tr>
<td>b. Customers</td>
<td>69</td>
<td>70</td>
<td>71</td>
</tr>
</tbody>
</table>

42. How have the following costs (on a per unit basis) changed in the past 12 months? (check one in each row)  

<table>
<thead>
<tr>
<th>Costs</th>
<th>Decreased more than 10%</th>
<th>Decreased 6-10%</th>
<th>Decreased 1-5%</th>
<th>No change</th>
<th>Increased 1-5%</th>
<th>Increased 6-10%</th>
<th>Increased more than 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Component/material cost</td>
<td>342</td>
<td>343</td>
<td>344</td>
<td>345</td>
<td>346</td>
<td>347</td>
<td>348</td>
</tr>
<tr>
<td>b. Employee wages</td>
<td>349</td>
<td>350</td>
<td>351</td>
<td>352</td>
<td>353</td>
<td>354</td>
<td>355</td>
</tr>
<tr>
<td>c. Employee benefits</td>
<td>356</td>
<td>357</td>
<td>358</td>
<td>359</td>
<td>360</td>
<td>361</td>
<td>362</td>
</tr>
<tr>
<td>d. Logistics/transport costs</td>
<td>363</td>
<td>364</td>
<td>365</td>
<td>366</td>
<td>367</td>
<td>368</td>
<td>369</td>
</tr>
<tr>
<td>e. Utilities/fuel</td>
<td>370</td>
<td>371</td>
<td>372</td>
<td>373</td>
<td>374</td>
<td>375</td>
<td>376</td>
</tr>
</tbody>
</table>

43. Which of the following production and support activities are outsourced by this plant? (check all that apply)  
- Fabrication and/or processing  
- Assembly  
- Staging and/or packaging  
- Warehousing and/or distribution  
- Information technology  
- Maintenance/asset management  
- Purchasing  
- Transportation  
- Customer service  
- Design and/or R&D  

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44. Please estimate the following customer and supplier measures for your plant:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Current Year</th>
<th>3 Years Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Customer reject rates (parts per million)</td>
<td>ppm 208</td>
<td>ppm 209</td>
</tr>
<tr>
<td>b. Customer retention rate (% customers retained from previous year)</td>
<td>% 210</td>
<td>% 211</td>
</tr>
<tr>
<td>c. Overseas sales (as % of total dollar volume)</td>
<td>% 212</td>
<td>% 213</td>
</tr>
<tr>
<td>d. Imported material/components (% of dollar volume purchased outside U.S.)</td>
<td>% 214</td>
<td>% 215</td>
</tr>
<tr>
<td>e. Imported material/components from China (% of dollar volume from China)</td>
<td>% 216</td>
<td>% 217</td>
</tr>
</tbody>
</table>

**CAPACITY / EQUIPMENT / IT**

45. Please estimate the following capacity/equipment measures for your plant:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Current Year</th>
<th>3 Years Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Production volume (as % of designed plant capacity)</td>
<td>% 78</td>
<td>% 217</td>
</tr>
<tr>
<td>b. Machine availability (as % of scheduled uptime)</td>
<td>% 79</td>
<td>% 218</td>
</tr>
<tr>
<td>c. Overall equipment effectiveness (% machine availability X % quality yield X % of optimal rate that equipment operates)</td>
<td>% 80</td>
<td>% 166</td>
</tr>
<tr>
<td>d. Return on invested capital (net operating profit after taxes ÷ by capital invested)</td>
<td>% 83</td>
<td>% 157</td>
</tr>
</tbody>
</table>

46. Please indicate the level of capital-equipment spending (as a percentage of sales) for 2006? ________________ %159

47. What is the anticipated change in capital-equipment spending for 2007 vs. 2006? (check one)

- [ ] Decrease more than 20%  
- [ ] Decrease 11 - 20%  
- [ ] Decrease 1 - 10%  
- [ ] Stay the same  
- [ ] Increase 1 - 10%  
- [ ] Increase 11 - 20%  
- [ ] Increase more than 20%

48. For which of these production activities are you most likely to purchase equipment next year? (check all that apply)

- [ ] Painting/coating/laminating  
- [ ] Welding/joining  
- [ ] Bending/forming  
- [ ] Molding  
- [ ] Assembling  
- [ ] Stamping  
- [ ] Power generation  
- [ ] Staying more than 20%

49. How has your application of new capital equipment affected plant financial performance (i.e., profitability)? (check one)

- [ ] Major increase  
- [ ] Some increase  
- [ ] No change  
- [ ] Some decrease  
- [ ] Major decrease

50. Please indicate the level of information-technology spending (as a percentage of sales) for 2006? ________________ %160

51. What is the anticipated change in information-technology spending for 2007 vs. 2006? (check one)

- [ ] Decrease more than 20%  
- [ ] Decrease 11 - 20%  
- [ ] Decrease 1 - 10%  
- [ ] Stay the same  
- [ ] Increase 1 - 10%  
- [ ] Increase 11 - 20%  
- [ ] Increase more than 20%

52. Which of the following information technology applications are currently in use at your plant? (check all that apply)

- [ ] Enterprise Resource Planning (ERP)  
- [ ] ERP II  
- [ ] Manufacturing resource planning (MRP II)  
- [ ] Manufacturing execution systems (MES)  
- [ ] Financial management systems (FMS)  
- [ ] Asset management (e.g., CMMS)  
- [ ] Warehouse management systems (WMS)  
- [ ] Transportation management systems (TMS)  
- [ ] Design systems (e.g., CAD, CAE)  
- [ ] Product data management (PDM)  
- [ ] Electronic data interchange (EDI)  
- [ ] Customer relationship management (CRM)  
- [ ] Product lifecycle management (PLM)  
- [ ] Mobile management (wireless systems)  
- [ ] Online purchasing  
- [ ] Online selling  
- [ ] Supply-chain management (SCM)  
- [ ] None of these

53. Which type of IT application (from list above) will your plant most likely purchase next? _____________________________

54. How has your implementation of IT affected plant financial performance (i.e., profitability)? (check one)

- [ ] Major increase  
- [ ] Some increase  
- [ ] No change  
- [ ] Some decrease  
- [ ] Major decrease

Thank you for completing the survey. Please return this questionnaire in the enclosed business reply envelope by **July 13, 2007**.

Please mail your completed survey to IW/MPI Census of Manufacturers at P.O. Box 630, Worthington, OH 43085.