

# Chapter 11: Tools to Determine Operational Productivity

## Key points of chapter

Another tools chapter, this one focused on industrial engineering type tools.

## Answers to Study Questions

1. Operations Auditing works when there's good documentation of a job (such as clerical or piecework types), and where precision is not a big deal. Work Sampling requires a visible activity with enough volume (number of employees) doing it to justify the cost of the study. Flow Process Charts require a job that's done consistently and frequently enough to justify the study cost.
2. Workers often have trouble coming up with realistic times and frequencies; the process is somewhat intrusive; it's subject to biases; it measures what is done, not necessarily what should be done or whether it's being done effectively.
3. Difficulties in distinguishing among tasks; it's intrusive; cost and length of time (usually at least ten days required); needs adjustment for cycles; etc.

## Answer to Exercise

Individual project; no common answer.

## Other Materials

A blank form for Flow Process Charting is included on the next page. It can be reproduced if you'd like to give the technique a try.

# Flow Process Chart

Sheet # \_\_\_\_ of \_\_\_\_

Charted by \_\_\_\_\_ Date \_\_\_\_\_

Project \_\_\_\_\_

Begins \_\_\_\_\_

Ends \_\_\_\_\_

☐ Person    ☐ Material \_\_\_\_\_

| Details of Method<br><input type="checkbox"/> Present <input type="checkbox"/> Proposed | Code                     |                          |                          |                          |                          | Distance | Quantity | Time | Notes | Actions* |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|----------|------|-------|----------|
|   | Operation                | Transport                | Inspection               | Delay                    | Storage                  |          |          |      |       |          |
| 1   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 3   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 4   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 5   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 6   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 7   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 8   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 9   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 10  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 11  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 12  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 13  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 14  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 15  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| 16  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |          |      |       |          |
| Totals: Number of steps ____  |                          |                          |                          |                          |                          |          |          |      |       |          |

\*Actions: "E" for Eliminate; "C" for Combine; "I" for Improve; "M" for Modify; "R" for Rearrange; "O" for Other.