

Chapter 6 homework

[Business, Management](#)



Chapter 6 Homework 6. 9. LEAD TIME Lead-time is a time gap between starting of a process and completion of scheduling and manufacturing operations of various products. Manufacturing lead-time is time taken from manufacturing to purchase of products made by customers. It consists of four processes that include preprocessing, processing, fixed and variable time. Preprocessing lead-time is the time required to generate work order from the time of requirement of various products. Processing time is the time taken to manufacture the various items or products. Fixed lead-time is the part of processing time, which is not variable according to the order of quantity. Variable lead-time is the part of processing time, which is dependable on the order quantity. Manufacturing lead-time is the summation of preprocessing, processing and post-processing lead-time (ORACLE, “Oracle Bills of Material Users Guide”).

CALCULATION OF MANUFACTURING LEAD TIME OF WORK CENTER 10 FROM SETUP A MACHINE

Setup on A = 50 minutes is the preprocessing time

Processing time is the move time between operations i. e. 30 minutes

Post-processing time is the run time of A = 5 minutes per piece

Lot size = 75

Total post-processing time = $5 \times 75 = 375$

Manufacturing lead-time = preprocessing time + processing time + post-processing time

= $50 + 30 + 375$

= 455 minutes

Source: (ORACLE, “Oracle Bills of Material Users Guide”)

CALCULATION OF MANUFACTURING LEAD TIME OF WORK CENTER 10 FROM SETUP B MACHINE

Setup on B = 100 minutes is the preprocessing time

Processing time is the move time between operations i. e. 30 minutes

Post processing time is the run time of B = 7 minutes per piece

Lot size = 75

Total post processing time = $7 \times 75 = 525$

Manufacturing lead-time = preprocessing time + processing time + post processing time

= $100 + 30 + 525 = 655$ minutes

Hence, the saving manufacturing lead-time of Work center 10 from Setup A and B machine = $655 - 455 = 200$ minutes

Source: (ORACLE, " Oracle Bills of Material Users Guide")

CALCULATION OF MANUFACTURING LEAD TIME OF WORK CENTER 20 FROM SETUP A MACHINE

Setup on A = 50 minutes is the preprocessing time

Processing time is the move time between operations i. e. 30 minutes

Post-processing time is the run time of A = 5 minutes per piece

Lot size = 125

Total post processing time = $5 \times 125 = 625$

Manufacturing lead-time = preprocessing time + processing time + post processing time

= $50 + 30 + 625 = 705$ minutes

Source: (ORACLE, " Oracle Bills of Material Users Guide")

CALCULATION OF MANUFACTURING LEAD TIME OF WORK CENTER 20 FROM

SETUP B MACHINE

Setup on B = 100 minutes is the preprocessing time

Processing time is move time between operations i. e. 30 minutes

Post processing time is the run time of B = 7 minutes per piece

Total post processing time = $7 \times 125 = 875$

Manufacturing lead time = preprocessing time + processing time + post processing time

= $100 + 30 + 875 = 1005$ minutes

Hence, the saving manufacturing lead-time Work center 20 from Setup A and

B machine = $1005 - 705 = 300$ minutes

Total saving manufacturing time of Center 10 and 20 from setup machine A and B = 500 minutes i. e. (200 + 300) minutes

Source: (ORACLE, " Oracle Bills of Material Users Guide")

6. 13. If the second machine is setup after the completion of the setup of first machine, then there will be no reduction in manufacturing lead-time. Setup time i. e. preprocessing time is fixed for a machine to work for a scheduled time. The manufacturing lead-time is affected with processing time i. e., move time between operations and post-processing time i. e. run time of the machines (ORACLE, " Oracle Bills of Material Users Guide").

6. 15. INPUT/OUTPUT REPORT AND ACTUAL BACKLOG AT THE END OF PERIOD 5

CUMULATIVE VARIANCE AND BACKLOG

Actual backlog is the differences between the total and actual planned within the given period. The calculation is done to maintain the output level for each period in order to reduce the lead-time and queue hours. The above

report shows a lower level of input and output. The work centers performance can be monitored through the analysis of planned and actual outputs. The lead-time and queue performance are monitored through planned and actual backlog (Arnold 515). Based on the above interpretation, it is estimated that actual backlog at the end of period 5 is 37 units.

6. 16. DETERMINATION OF RUN SEQUENCE FOR EACH OF THE SEQUENCING RULES

First Come First Serve (FCFS) is a sequencing rule based on which a process or job, which arrive first for manufacturing and scheduling of products will be processed first (Pille 4).

Earlier Due Date (EDD) is the sequencing rule of a process or job in accordance with which due date period earliest from other due dates will be delivered first (Pille 4).

Operation Due Date (ODD) is the sequencing rule of a process or job on the basis of which operation due date earlier from other due dates will be operated first (Pille 4).

Short Processing Time (SPT) is the sequencing rule of a process or job based on which processing time shorter than other processing time are processed at the earliest (Pille 4).

6. 18. CALCULATION OF CRITICAL RATIOS AND ACTUAL TIME REMAINING (DAYS) FOR THE FOLLOWING ORDERS

Critical ratio is calculated by dividing the scheduled time of completion with the expected time of completion (Pearson Education 18).

Works Cited

Arnold, J. R. Tony. Introduction to Materials Management. India: Pearson

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“ ORACLE.” Oracle Bills of Material Users Guide. 2010. Web. Sep 19 2014.

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