

Required:

1. What advantages are there to breaking down the ROI computation into two separate elements, margin and turnover?
2. Fill in the missing information above, and comment on the relative performance of the three companies in as much detail as the data permit. Make *specific recommendations* about how to improve the ROI.

(Adapted from National Association of Accountants, *Research Report No. 35*, p. 34)

PROBLEM 12-16 Measures of Internal Business Process Performance [LO 12-3]

MacIntyre Fabrications, Ltd., of Aberdeen, Scotland, has recently begun a continuous improvement campaign in conjunction with a move toward Lean Production. Management has developed new performance measures as part of this campaign. The following operating data have been gathered over the last four months:



	Month			
	1	2	3	4
Throughput time	?	?	?	?
Manufacturing cycle efficiency	?	?	?	?
Delivery cycle time	?	?	?	?
Percentage of on-time deliveries	72%	73%	78%	85%
Total sales (units)	10,540	10,570	10,550	10,490

Management would like to know the company's throughput time, manufacturing cycle efficiency, and delivery cycle time. The data to compute these measures have been gathered and appear below:

	Month			
	1	2	3	4
Move time per unit, in days	0.5	0.5	0.4	0.5
Process time per unit, in days	0.6	0.5	0.5	0.4
Wait time per order before start of production, in days	9.6	8.7	5.3	4.7
Queue time per unit, in days	3.6	3.6	2.6	1.7
Inspection time per unit, in days	0.7	0.7	0.4	0.3

Required:

1. For each month, compute the following:
 - a. The throughput time.
 - b. The manufacturing cycle efficiency (MCE).
 - c. The delivery cycle time.
2. Using the performance measures given in the problem and those you computed in (1) above, identify whether the trend over the four months is generally favorable, generally unfavorable, or mixed. What areas apparently require improvement and how might they be improved?
3. Refer to the move time, process time, and so forth, given for month 4.
 - a. Assume that in month 5 the move time, process time, and so forth, are the same as for month 4, except that through the implementation of Lean Production, the company is able to completely eliminate the queue time during production. Compute the new throughput time and MCE.
 - b. Assume that in month 6 the move time, process time, and so forth, are the same as for month 4, except that the company is able to completely eliminate both the queue time during production and the inspection time. Compute the new throughput time and MCE.