

## CHAPTER 2 OPERATIONS AND SUPPLY STRATEGY

### Review and Discussion Questions

1. Can a factory be fast, dependable, flexible, produce high-quality products, and still provide poor service from a customer's perspective?

Yes, if a customer's needs are not considered and does not influence strategy development, an organization could be delivering the wrong service or product. Even though the product or service is delivered fast, dependable, and flexible in design and features and is of high technical quality, overall service could be rated "poor" by a customer who demands a different mix of features and attributes. It is often best not to be fastest to the market, but to be the best firm in the market as judged by the ultimate customer.

2. Why should a service organization worry about being world class if it does not compete outside its own national border? What impact does the Internet have on this?

As the environment changes, firms can find themselves faced with competition from outside their industry or from outside their home country. Even if they do not, the principles of a world class firm can be applied to any and all manufacturing and service concerns. Benchmarking or rating your firm's performance to the best in your industry or class can provide future strategic directions for improvements.

The Internet is global by its very nature. Retail stores must now compete with Internet stores. Local auction houses will be in competition with Internet auction sites such as eBay. Virtually all organizations will be impacted in some form by the Internet. It is important that this impact be considered.

3. What are the major priorities associated with operations strategy? How has their relationship to each other changed over the years?

The four major imperatives are cost, quality, delivery, and flexibility. In the sixties, these four imperatives were viewed from a tradeoff's perspective. For example, this meant that improving quality would result in higher cost. However, more recent thought posits that these four imperatives can improve simultaneously, and in many industries may be necessary for success. The problem then becomes one of prioritizing and managing towards orderly improvement.

4. For each of the different priorities in question 3, describe the unique characteristics of the market niche with which it is most compatible.

Cost is most compatible with products that are commodities (i.e., highly standardized products with many alternative suppliers). Quality provides companies a means of (1) differentiating a product and winning orders or (2) competing in a market and qualifying for orders. Quality is now pervasive among all market niches in that customers now expect high quality. Speed and reliability of delivery are essential in those markets where there is a large degree of customization. In addition, reliable delivery may be a competitive advantage in some regions of the world where delivery is difficult due to geographical or political reasons. Flexibility is important where customers demand low volume but wide varieties of products.

5. A few years ago the dollar showed relative weakness with respect to foreign currencies, such as the yen, mark, and pound. This stimulated exports. Why would long-term reliance on a lower valued dollar be at best a short-term solution to the competitiveness problem?

This approach is dependent on economic policies of other nations. This is a fragile dependency. A long-term approach is to increase manufacturing and service industry productivity in order to regain competitive advantage. At a national level, solutions appear to lie in reversing attitudes and strategies identified in the MIT Commission Report. At a firm level, competitive weapons are consistent quality, high performance, dependable delivery, competitive pricing, and design flexibility.

6. In your opinion, do business schools have competitive priorities?

Their competitive priorities include:

Quality of professors and curriculum—consistent quality and high performance

Leader in development of new curriculum topics—design changes

Academic level of student attracted—consistent quality

Quantity and quality of research published—consistent quality

Quality of library resources—quality

What companies recruit at the school—after sales service

Success rate of graduates—consistent quality

Availability of financial aid—low price and after sales service

Cost of tuition—low price

7. Why does the “proper” operations strategy keep changing for companies that are world-class competitors?

The top three priorities have generally remained the same over time: make it good, make it fast, and deliver it on time. Others have changed. Part of this may be explained by realizing that world class organizations have achieved excellence in these three areas and are, therefore, focusing attention on some of the more minor areas to gain competitive advantage. The changes in the minor priorities may result from recognizing opportunities or from changes in customer desires or expectations.

8. What is meant by the expressions order winners and order qualifiers? What was the order winner(s) for your last purchase of a product or service?

Order winners are dimensions that differentiate the product or service or services of one firm from another. Order qualifiers are dimensions that are used to screen a product or service as a candidate for purchase. Obviously, answers will vary for the order winners from your last purchase.

9. What do we mean when we say productivity is a “relative” measure?

For productivity to be meaningful, it must be compared with something else. The comparisons can be either intracompany or intercompany as in the case of benchmarking. Intercompany comparisons of single factor productivity measures can be somewhat tenuous due to differences in accounting practices (especially when comparing with foreign competitors). Total factor productivity measures are somewhat more robust for comparison purposes.

**Problems**

Problem	Type of Problem			Difficulty	New Problem	Modified Problem	Check Figure in Appendix A
	Total Productivity Measure	Multifactor Productivity Measure	Partial Productivity Measure				
1			Yes	Moderate	Yes		
2			Yes	Moderate	Yes		
3	Yes			Moderate	Yes		
4			Yes	Moderate			Yes
5		Yes	Yes	Moderate			
6	Yes		Yes	Moderate			
7			Yes	Easy			
8			Yes	Easy			
9			Yes	Easy			
10			Yes	Easy			

1. As Operations Manager, you are concerned about being able to meet sales requirements in the coming months. You have just been given the following production report.

	JAN	FEB	MAR	APR
<b>Units Produced</b>	2300	1800	2800	3000
<b>Hours per Machine</b>	325	200	400	320
<b>Number of Machines</b>	3	5	4	4

Find the average monthly productivity (units per hour).

Average productivity  $(2.36+1.80+1.75+2.34)/4 = 2.06$

2. Sailmaster makes high-performance sails for competitive windsurfers. Below is information about the inputs and outputs for one model, the Windy 2000.

Units sold	1,217
Sale price each	\$1,700
Total labor hours	46,672
Wage rate	\$12/hour
Total materials	\$60,000
Total energy	\$4,000

Calculate the productivity in **sales revenue/labor expense**?

$$((1217*1700)/(46672*12))=3.69$$

3. *Acme Corporation* received the data below for its rodent cage production unit. Find the **total** productivity?

Output	Input	
50,000 cages	Production time	620 man hours
Sales price: \$3.50 per unit	Wages	\$7.50 per hour
	Raw materials (total cost)	\$30,000
	Component parts (total cost)	\$15,350

$$(50000*3.5)/((620*7.5)+30000+15350) = 3.5$$

4. Labor Productivity – units/hour

Model	Output in Units	Input in Labor Hours	Productivity (Output/Input)
Deluxe Car	4,000	20,000	0.20
Limited Car	6,000	30,000	0.20

Labor Productivity – dollars

Model	Output in Dollars	Input in Dollars	Productivity (Output/Input)
Deluxe Car	4,000(\$8,000)= \$32,000,000	20,000(\$12.00)= \$240,000	133.33
Limited Car	6,000(\$9,500)= \$57,000,000	30,000(\$14.00)= \$420,000	135.71

The labor productivity measure is a conventional measure of productivity. However, as a partial measure, it may not provide all of the necessary information that is needed. For example, increases in productivity could result from decreases in quality, and/or increases in material cost.

5. Labor Productivity

Country	Output in Units	Input in Hours	Productivity (Output/Input)
U.S.	100,000	20,000	5.00
LDC	20,000	15,000	1.33

## Capital Equipment Productivity

Country	Output in Units	Input in Hours	Productivity (Output/Input)
U.S.	100,000	60,000	1.67
LDC	20,000	5,000	4.00

Yes. You would expect the capital equipment productivity measure to be higher in the U.S. than in a LDC.

## b. Multifactor – Labor and Capital Equipment

Country	Output in Units	Input in Hours	Productivity (Output/Input)
U.S.	100,000	$20,000 + 60,000 = 80,000$	1.25
LDC	20,000	$15,000 + 5,000 = 20,000$	1.00

Yes, labor and equipment can be substituted for each other. Therefore, this multifactor measure is a better indicator of productivity in this instance.

## c. Raw Material Productivity

Country	Output in Units	Input in Dollars	Productivity (Output/Input)
U.S.	100,000	\$20,000	5.00
LDC	20,000	$\text{FC } \$20,000/10 = \$2,000$	10.00

The raw material productivity measures might be greater in the LDC due to a reduced cost paid for raw materials, which is typical of LDC's.

## 6. Total Productivity

Year	Output in Dollars	Input in Dollars	Productivity (Output/Input)
2007	\$200,000	$\$30,000 + \$35,000 + \$5,000 + \$50,000 + \$2,000 = \$122,000$	1.64
2008	\$220,000	$\$40,000 + \$45,000 + \$6,000 + \$50,000 + \$3,000 = \$144,000$	1.53

Partial Measure – Labor

Year	Output in Dollars	Input in Dollars	Productivity (Output/Input)
2007	\$200,000	\$30,000	6.67
2008	\$220,000	\$40,000	5.50

Partial Measure – Raw Materials

Year	Output in Dollars	Input in Dollars	Productivity (Output/Input)
2007	\$200,000	\$35,000	5.71
2008	\$220,000	\$45,000	4.89

Partial Measure – Capital

Year	Output in Dollars	Input in Dollars	Productivity (Output/Input)
2007	\$200,000	\$50,000	4.00
2008	\$220,000	\$50,000	4.40

The overall productivity measure is declining, which indicates a possible problem. The partial measures can be used to indicate cause of the declining productivity. In this case, it is a combination of declines in both labor and raw material productivity, but an increase in the capital productivity. Further investigation should be undertaken to explain the drops in both labor and raw material productivity. An increase in the cost of both of these measures, without an accompanying increase in the selling price might explain these measures.

7.

Contract	Output in Units	Input in Hours	Productivity (Output/Input)
Navy	2300	$25(2)40 = 2000$	1.15
Army	5500	$35(3)40 = 4200$	1.31

The workers were most productive on the Army contract.

8.

Month	Output in Dollars	Input in Hours	Productivity (Output/Input)	Percentage Change
April	\$45,000	1560	28.85	
May	\$56,000	1820	30.77	$(30.77 - 28.85) / 28.85 = 6.67\%$

9.

Year	Output in Packages	Input in Drivers	Productivity (Output/Input)	Percentage Change
2007	103,000	84	1226.2	
2008	112,000	96	1166.7	$(1166.7 - 1226.2) / 1226.2 = -4.85\%$

10.

Part	Output in Hamburger Equivalents	Input in Hours	Productivity (Output/Input)
700 Hamburgers 900 Cheeseburgers (1.25) 500 Chicken Sandwiches (.80)	2225	200	11.125
700 Hamburgers 700 Cheeseburgers (1.25) 700 Chicken Sandwiches (.80)	2135	200	10.675