CHAPTER 02
COMPETITIVENESS, STRATEGY, AND PRODUCTIVITY

Teaching Notes

The topics covered in this chapter can be used to help get your course in OM off to an interesting start. Most of your students are aware that U.S. firms are having a difficult time competing with foreign firms in both the domestic and international markets. Many of them have grown up using products produced by foreign firms on an everyday basis and they have developed a great deal of respect for the quality of their products. Students are probably as familiar with names like Honda, Toyota, Sony, BP Oil, Nestlé & BIC as they are with Ford, GM, GE, IBM, Texaco, Hershey, and Parker.

I think students will relate to the fact that companies must be productive to be competitive and that to be competitive they must have some well thought out approach, plan, or strategy on how to achieve this position. In other words, students will become aware that business firms compete with each other in a variety of ways and will study the key competitive factors, which are of primary concern in today's global business environment. Students will focus on operations strategy with special attention being given to some of the newer strategies based on quality, time, and lean production systems. Finally, students will be able to understand why it is important to learn what productivity really is, how we measure it, what factors affect it, and how firms can improve their productivity.

Reading: Why Productivity Matters

1. Higher productivity relative to competitors is very important for a nation because it provides the nation with a competitive advantage in the marketplace. Productivity increases add value to the economy while controlling inflation. In addition, higher productivity provides the basis for a sustainable long-term growth in the economy. It allows companies to undercut competitors' prices to improve their market share or to realize higher profit margin at the same price level. Relative higher productivity also makes it more difficult for foreign companies to compete.

2. In general, service jobs have lower productivity than their manufacturing counterparts do because service productivity is very difficult to measure and, consequently, difficult to improve. In many cases, service jobs include intellectual activities and a high degree of variability, which makes productivity improvements difficult to achieve. Manufacturing jobs, on the other hand, lend themselves to productivity improvements mainly because they are able to utilize computer-based technology such as robotics to increase worker productivity.

3. Higher productivity allows companies to undercut competitors' prices to improve their market share, or to realize higher profit margin at the same price level. Relative higher productivity also makes it more difficult for foreign companies to enter a new market because it is difficult for them to compete against companies that have relatively higher productivity.

Reading: Dutch Tomato Growers Productivity Advantage

1. The factors that enable Dutch tomato growers to achieve much higher productivity than Italian and Greek growers include computerized, climate controlled greenhouses and a soil spun from basalt and chalk allow for precise control of humidity and nutrition, and enables growers to produce their crops year round.

2.   Dutch growers' supply chain is an important factor because a Dutch trading company works closely with supermarket chains in Europe so that farmers are able to sell their output in high volume, which enables Dutch farmers to match supply and demand closely.

Answers to Discussion and Review Questions

1.   They would be helpful in the sense that they would give U.S. manufacturers time to step up the use of industrial robots and other measures, which would make them better able to compete in domestic and world markets. The higher profits possible from reduced competition or higher prices on foreign cars could be used for research and development costs. Possible pitfalls include higher prices and less choice, which U.S. consumers would have to endure, and the possibility that U.S. companies would not use this as an opportunity to improve, but merely as a crutch. From the Japanese standpoint, they would be penalized for doing what many would see as a good job.

2.   Business organizations compete with one another in a variety of ways. Key among these ways are price, quality, product differentiation, flexibility, and delivery time.

3.   Characteristics such as price, quality, delivery speed, delivery reliability all can be order qualifiers or order winners. It is important to determine the set of order qualifier and order winner characteristics so that companies can emphasize or de-emphasize a given characteristic based on its classification of importance. Marketing must play a major role in determining order qualifiers and order winners. In classifying order winners and order qualifiers, marketing and operations must work together to match the market needs with the operational capability of the firm.

4.   One store that many of us shop at is Walmart. In the last decade, Walmart has been growing steadily and gaining market share. There are numerous reasons why Walmart has been successful in a very competitive market. Walmart's ability to provide a very wide variety of goods with reasonable prices gives the company a competitive edge. Another reason involves the firm's ability to integrate various aspects of its operations with suppliers. In other words, successful supply chain management provides Walmart with another competitive advantage.

       Many of us travel around the country and the world and stay at various hotels/motels. One of the hotel chains that has been successful is Super 8. The company is able to compete successfully because it is able to offer a safe, clean overnight stay at very reasonable prices in small markets. The specific tactics followed by the company are consistent with the basic niche that the company has carved out for itself.

5.   The Balanced Scorecard is a top-down management system that helps managers focus attention on strategic issues related to finance, internal processes, customers, and learning and growth.

6.   Strategy is the basic approach used by an organization to achieve its goal. Tactics are the methods and actions that are taken to accomplish strategies and carry out operations.

7.   Organization strategy provides the overall direction for the organization and is broad in scope, e.g., low cost, scale-based strategies, specialization, newness, flexible operations, high quality, service, or sustainability. Operations strategy is narrower in scope, dealing primarily with the operations aspect of the organization. Operations strategy must be consistent with organization strategy and deals with products, processes, methods, operating resources, quality, costs, lead times, and scheduling.

8. Time-based strategies are approaches that focus on reducing the time needed to conduct the various activities in a process. The rationale is that by reducing time, costs are generally lower, productivity is higher, quality tends to be higher, product innovations appear on the market earlier, and customer service is improved. Examples of time-based strategies include reductions in any three of the following: planning time, product/service design time, processing time, changeover time, delivery time, or response time for complaints.

9. a. Productivity is the ratio of output to input.

   b. Productivity measures are used to judge the effective use of resources by countries, companies, and units within companies.

   c. High productivity rates relative to competitors can mean competitive advantages for companies. For countries, high productivity rates can reduce the risk of inflation and generate high standards of living for the country as a whole.

   d. Operations.

   e. Efficiency relates to a fixed set of tools or conditions. Productivity is wider in scope. Efficiency can be improved by better use of existing labor and equipment. Productivity can be improved by changing work methods, but also by changing equipment or conditions. The example of cutting grass with a pair of scissors is a good one: An efficiency approach would focus on the best way to use the scissors; a productivity approach would focus on use of a lawn mower. Note: Use of a mower, while more productive than the use of scissors, still may have room for improvement in its efficiency.

10. Factors affecting productivity include methods, capital, quality, technology, and management.

    Ways productivity can be improved include the following: Using productivity measures for all operations; eliminating bottlenecks; soliciting ideas from workers; forming work teams; studying other firms; reexamining work methods; establishing reasonable goals for improvement; obtaining support from management; measuring, rewarding, and publicizing improvements; and finally, not confusing productivity with efficiency because productivity is a much broader concept.

11. The Japanese worker is probably working smarter, if not harder, than U.S. workers. By working smarter, we mean the Japanese are using more productive work methods than American workers. One way that the Japanese accomplish this is by using time-based strategies that focus on reducing the time needed to accomplish various tasks. Some of the areas in which their organizations benefit from time reduction are planning time, design time, processing time, changeover time, delivery time, and response time for complaints.

12. It appears that Boeing can concentrate on selling its smaller airplanes in larger volumes to smaller airline companies. The advantage of producing smaller airplanes is the fact that Boeing can produce relatively large quantities at a lower cost. The disadvantage of producing smaller airplanes is that most likely, the profit margin is less and larger quantities must be sold to generate the same income as when smaller quantities of larger airplanes are produced. The advantage of producing larger airplanes is that most likely the profit margin is higher and the Airbus Company can afford to produce a smaller quantity of large airplanes to generate the same income as when larger quantities of smaller airplanes are produced by the rival company.

13. a. Interest rate on savings.

    b. Interest rate on checking and CDs.

    c. Loan rates.

    d. Quick loan application processing.

    e.   No fees or low fee values (free checking, no or low ATM fees).

    f.   Number of branches and locations to make it more convenient for the customers.

    g.   Free on-line banking.

    h.   Extended hours of service.

    i.   Extra services.

    j.   Lower minimum deposit before charging a service fee.

14.   Technology usually works best when processing requirements are uniform. Therefore, reducing the variability provides more opportunities for implementing technology.

15.   Answers will vary. Examples of companies with time based-strategies include fast-food restaurants, overnight package delivery companies, and universities offering undergraduate degrees in less time than the standard four years. Companies with quality-based strategies include high-end hotels, manufacturers of luxury automobiles, and high-end retailers.

Taking Stock

1.   Top and senior management should be involved in formulating organizational strategy. However, the opinions of middle and lower management people should be sought in developing organizational strategy.

2.   Competitive trade-offs that may arise in a fast-food restaurant include price vs. quality and cost vs. customer service. (If we have too few cashiers, customer waiting time will increase and subsequently the service level will decrease. On the other hand, if we have too many cashiers, the server idle time will increase, which in turn will result in unnecessarily high labor costs and lower productivity.)

3.   a.   Technology can improve competitiveness by improved product and service offerings, more efficient processing, a better Web site, more efficient order processing, better communication, easier and more effective coordination of supply chains, automatic billing, and automatic error checking.

    b.   Computers and the related automation of various company or manufacturing functions and the Internet can assist in improving productivity by reducing processing time for activities.

Critical Thinking Exercises

1.   The "productivity paradox" refers to massive investment in information technology that occurred in the latter part of the last century that did not appear to result in productivity gains. However, since that time, there have been consistent annual gains in productivity, perhaps due, in part, to IT investments.

2.   The automated processing would give a much higher labor productivity ratio than the manual processing would. We could use multifactor productivity as a more meaningful measure.

3.   Focusing solely on efficiency may result in overlooking potential major productivity gains that could be achieved by altering inputs rather than simply refining methods to achieve relatively modest gains.

4.   Although sending a note to Dom's boss might be perceived by some as disloyal, Sam would be doing the right thing for the rest of the employees. If Sam waits until Dom's unethical behavior is discovered, the result could be very negative for the rest of the employees.

5. Student answers will vary (see Chapter 1 for examples). Other examples could include any two of the following:

    a. Discontinuing safety training to save on training costs and boost the company's share price would violate the Utilitarian Principle due to the increased potential for worker accidents.

    b. Requiring buyers within a company to purchase materials illegally would violate the Rights Principle due to the unethical nature of the buying process imposed upon the buyers.

    c. Awarding a bid to a friend's company that was not the lowest cost bidder would violate the Fairness Principle due to the different standards applied to bidders.

    d. Refusing to invest in equipment to mitigate hazardous waste from an operations process would violate the Common Good Principle due to the risk of increased pollution in the community.

    e. A company's publicist making derogatory, false statements about a competitor's products would violate the Virtue Principle due to the lack of honesty in those statements.

Solutions

1. a. Anniversary = 300 / 8 = 37.5 meals/worker; Wedding = 240 / 6 = 40 meals/worker.
    b. Possible reasons are differences in the menu, number of courses, time of day, facilities, and worker skills/experience.

2.

Week	Crew Size	Yards Installed	Labor Productivity per Worker
1	4	96	24 yards
2	3	72	24
3	4	92	23
4	2	50	25
5	3	69	23
6	2	52	26

Notes:
Labor Productivity per Worker = Yards Installed / Crew Size

We can determine the Average Labor Productivity per Worker for each crew size as follows:

Crew Size of 2: (25 + 26) / 2 = 25.5
Crew Size of 3: (24 + 23) / 2 = 23.5
Crew Size of 4: (24 + 23) / 2 = 23.5

A crew size of 2 seems to work best with an Average Labor Productivity per Worker = 25.5 yards installed per worker.

3.

Week	Output	Number of Workers	Material (lbs.)	Labor Cost	Overhead Cost	Material Cost	Total Cost	MFP
1	30,000	6	450	2,880	4,320	2,700	9,900	3.03
2	33,600	7	470	3,360	5,040	2,820	11,220	2.99
3	32,200	7	460	3,360	5,040	2,760	11,160	2.89
4	35,400	8	480	3,840	5,760	2,880	12,480	2.84

Notes:
Labor Cost = Number of Workers x 40 hours x $12/hour
Overhead Cost = Labor Cost x 1.50
Material Cost = Material (lbs.) x $6/lb.
Total Cost = Labor Cost + Overhead Cost + Material Cost
Multifactor Productivity (MFP) = Output / Total Cost (rounded to two decimals)

Multifactor productivity dropped steadily from a high of 3.03 to a low of 2.84.

4.　　a.　**Prior to Buying New Equipment:**
Labor Productivity = Carts per Worker per Hour = 80 / 5 = 16 Carts per Worker per Hour.

After Buying New Equipment:
Labor Productivity = Carts per Worker per Hour = (80 + 4) / (5 − 1) = 84 / 4 = 21 Carts per Worker per Hour.

b.　**Prior to Buying New Equipment:**
Multifactor Productivity = Carts per Dollar (Labor + Equipment)
Labor = 5 workers x $10/hour = $50/hour
Equipment = Machine Cost = $40/hour
Multifactor Productivity = 80 carts / ($50 + $40) = 0.89 Carts per Dollar (rounded to two decimals)

After Buying New Equipment:
Multifactor Productivity = Carts per Dollar (Labor + Equipment)
Labor = 4 workers x $10/hour = $40/hour
Equipment = Machine Cost = $40/hour + $10/hour = $50/hour
Multifactor Productivity = 84 carts / ($40 + $50) = 0.93 Carts per Dollar (rounded to two decimals)

c.　$Labor\ Productivity\ Growth = \frac{Current\ productivity - Previous\ productivity}{Previous\ productivity} x100$

$$= \frac{21 - 16}{16} x100 = \frac{5}{16} x100 = 31.25\% \ (rounded\ to\ two\ decimals)$$

$$MFP\ Growth = \frac{Current\ productivity - Previous\ productivity}{Previous\ productivity}x100$$
$$= \frac{0.93 - 0.89}{0.89}x100 = \frac{0.04}{0.89}x100$$
$$= 4.49\%\ (rounded\ to\ two\ decimals)$$
$$* Excel\ may\ show\ a\ rounded\ number\ of\ 5\%$$

5. **With Scrap Rate of 10%:**

Amount of Good Product Produced = Amount In x (1 – Scrap Rate)

<u>Re-arranging terms:</u>

Amount In = Amount of Good Product Produced / (1 – Scrap Rate)

Amount In = 72 pieces per hour / (1 – 0.10) = 72 pieces per hour / (0.90) =

80 pieces per hour.

Without Scrap:

The output could be 80 pieces per hour.

The increase in productivity would be 80 – 72 = 8 pieces per hour.

This would amount to a % productivity increase of: (80 – 72) / 72 = 11.11% (rounded to two decimals).

6. Current period productivity $= \dfrac{160\ units}{40\ hours} = 4.00\ units\ /\ hour$ (rounded to two decimals)

Previous period productivity $= \dfrac{138\ units}{36\ hours} = 3.83\ units\ /\ hour$ (rounded to two decimals)

$$Productivity\ Growth = \frac{Current\ productivity - Previous\ productivity}{Previous\ productivity}x100$$
$$= \frac{4.00 - 3.83}{3.83}x100 = 4.44\%$$

Thus, there was an increase of 4.44% in productivity (rounded to two decimals).

7. a. Labor Productivity and Multifactor Productivity for Each Unit

Unit	Employees	Customers per Day	Labor Cost	Overhead Cost	Material Cost	Total Cost	Labor Productivity	MFP (2 decimals)	MFP (3 decimals)
A	4	36	800	800	180	1,780	9.00	0.02	0.020
B	5	40	1,000	1,000	200	2,200	8.00	0.02	0.018
C	8	60	1,600	1,600	300	3,500	7.50	0.02	0.017
D	3	20	600	600	100	1,300	6.67	0.02	0.015

<u>Notes:</u>

Labor Cost = Employees x 8 hours x $25/hour
Overhead Cost = Labor Cost x 1.00
Material Cost = Customers x $5/customer
Total Cost = Labor Cost + Overhead Cost + Material Cost
Labor Productivity = Customers per Day / Employees (rounded to two decimals)
Multifactor Productivity (MFP) = Output / Total Cost (shown rounded to two decimals & three decimals above)

b.   Labor Productivity and Multifactor Productivity for Each Unit (each employee is able
        to process one additional customer per day)

Unit	Employees	Customers per Day	Labor Cost	Overhead Cost	Material Cost	Total Cost	Labor Productivity	MFP (2 decimals)	MFP (3 decimals)
A	4	40	800	800	200	1,800	10.00	0.02	0.022
B	5	45	1,000	1,000	225	2,225	9.00	0.02	0.020
C	8	68	1,600	1,600	340	3,540	8.50	0.02	0.019
D	3	23	600	600	115	1,315	7.67	0.02	0.017

Notes:
Customers per Day = Original Customers per Day from part a above + (Employees x 1 Additional Customer per Day)
Labor Cost = Employees x 8 hours x $25/hour
Overhead Cost = Labor Cost x 1.00
Material Cost = Customers x $5/customer
Total Cost = Labor Cost + Overhead Cost + Material Cost
Labor Productivity = Customers per Day / Employees (rounded to two decimals)
Multifactor Productivity (MFP) = Output / Total Cost (shown rounded to two decimals & three decimals above)

8.

Search Approach	Search Average Time (min.)	Cost per Search	Output ($)	Productivity per Dollar Input
Current	40	40 min. x $2/min. = $80	$400	$400/$80 = $5.00
Company A	30 (40 – 10)	(30 min x $2/min.) + $3.50/search = $63.50	$400	$400/$63.50 = $6.30
Company B	28 (40 – 12)	(28 min. x $2/min.) + $3.60/search = $59.60	$400	$400/$59.60 = $6.71

Notes:
This problem expresses the output in terms of standard price rather than in units.

9.   Number of employees = 3.
        Each employee earns $25/hour and works 40 hours/week.

Each employee identifies an average of 3,000 leads per week.
The sign-up rate is 4% of the leads identified.
Revenue per sign-up = $70.
Material costs = $1,000 per week.
Overhead costs = $9,000 per week.

Multifactor Productivity = Fees generated per dollar of input

$$MFP = \frac{3{,}000 \ leads/employee \ x \ 3 \ employees \ x \ .04 \ signups/lead \ x \ \$70/signup}{(3 \ employees \ x \ 40 \ hours/employee \ x \ \$25/hour) + \$1{,}000 + \$9{,}000}$$

$$MFP = \frac{\$25{,}200}{\$13{,}000} = 1.94$$

Multifactor Productivity = 1.94 (rounded to two decimals)

Case: Home-Style Cookies

1. A batch process is used. A worker checks the master list for ingredients, and enters that information into the computer. The computer determines ingredient quantities, and then automatically orders the ingredients, which are automatically sent to mixing machines. After mixing, the batter is poured into a cutting machine. Individual cookies are then dropped onto a continuous band and transported through an oven. Filled cookies require an extra step. After baking, cookies are cooled on a spiral cooling rack. Cookies are inspected, defectives are removed, and the remaining cookies are packaged and labeled.

2. Productivity was increased by the following: Using a computer to determine the amounts of ingredients needed, by cutting cookies diagonally to reduce the space required, by increasing the length of each oven by 25 feet, by baking cookies in a sequence that minimizes downtime for cleaning, by using broken cookies in the oatmeal cookies, and by reclaiming heat from the ovens to heat the building. The company recently increased the length of its ovens so that more cookies can be baked at the same time.

3. All companies have a moral obligation to their employees. Small companies with local owners, particularly in a small community, are more likely to be influenced by such considerations than large companies in large communities. The issue is a difficult one, often without easy solutions. Cost and efficiency may favor layoffs, but ill will and the effects on morale of employees who remain are important considerations.

4. Freshness of cookies, frequent changes of label requirements, and baking to customer order are factors that favor minimal inventories. Benefits include lower inventory costs, satisfied customers (due to freshness of product), and less need for storage space.

5. Freshness, list of ingredients, packaging/display, appearance of product (size, shape, color), taste are potential factors when judging the quality of cookies.

6. Because the cookies do not use preservatives, the product probably appeals to health-conscious buyers, and there are fewer ingredients to purchase, store, and mix. However, without preservatives, the shelf life of the cookies is limited.

7. The company's strategy is to provide a high quality ("good food") cookie that appeals to a particular market niche.

Case: Hazel Revisited

1. Her customers are her neighbors and friends. She has had personal relationships with many of her customers for years and they are going to want to help her as long as she does a good job.

2. a. By increasing her productivity, Hazel can mow more lawns over a given length of time (day, week and/or month) and increase her total revenue. Hence, if she maintains her present cost structure per lawn, she will increase profits.

    b. By improving her mowing technique.

       By investing in equipment that is more productive.

       By experimenting with different crew sizes to find the most productive combination or division of labor.

3. She should consider time, cost and competition.

4. The advantages would be greater market share, higher sales opportunity, economies of scale, and higher utilization of the equipment. The disadvantages of expanding include additional transportation time and cost, increased wear and tear on the equipment, and it may be more difficult for her to compete outside of her own neighborhood where she is already known.

5. a. There will be many people who would defend this statement and many small businesses are successful without mission statements and objectives. However, it is difficult to project how much improvement could be made if they did have mission statements and objectives and used them to provide better direction, guidance, and focus. Short-run results may not be apparent, but over a longer period, gradual and subtler improvements may become noticeable and even dramatic improvements can take place in the end.

    b. The development of the mission statement would force Hazel to sit down and spend some time determining what business she is in or wants to be in and her business' reason for existence. This process also should help Hazel develop a clear statement of purpose, which should serve as a guide in determining what she wants to accomplish in terms of goals and objectives for her business. From here, Hazel should find it easier to develop her strategy and plan how she is going to achieve her goals and objectives. This process will also assist her in gaining the proper focus for making decisions.

    c. Many people have the false impression that mission statements and goal setting are only for large organizations when the facts show that many small businesses fail because they really do not know in what business they are. Strategic planning on how to accomplish goals and objectives is just as important for the small business as it is for the large one and it is extremely important for the new small business, which desperately needs direction and guidance in the beginning.

Case: Your Garden Gloves

1. We are given the following:

Crew Size	Average Productivity per Crew
2	4,234 square feet per day
3	5,352 square feet per day
4	7,860 square feet per day

We need to determine the productivity per worker using the following formula:

Average Productivity per Crew
    Crew Size

Crew Size	Average Productivity per Crew	Productivity per Worker
2	4,234 square feet per day	4,234 / 2 = 2,117 square feet per day
3	5,352 square feet per day	5,352 / 3 = 1,784 square feet per day
4	7,860 square feet per day	7,860 / 4 = 1,965 square feet per day

The crew size of 2 had the highest productivity. The crew size of 3 had the lowest productivity.

The crew size of 4 was in the middle.

One reason for the difference in productivity between a crew size of 2 and a crew size of 3 could be that when 3 workers are assigned to a small job, workers may be getting in the way of each other, which could cause wait time. A second reason could be that the larger crew size may lead to more standing around and talking. A third reason might be that workers are more productive when working in pairs.

A possible reason for the difference in productivity between a crew size of 2 and a crew size of 4 could be that when 4 workers are assigned to a large job, workers still may be getting in the way of each other, which would cause wait time. In addition, 4 workers will have more interaction, standing around, etc.

2. Even though the productivity of 4 was not the highest, the total time to complete the cleanup would still be less than if only a crew of 2 were to be used. In addition, the owner may have wanted to impress the customer by using a larger crew.

3. Perhaps the size of the crew is not as influential in regards to productivity levels as is the composition of the crew. One area that the productivity ratios fail to accommodate for is team synergy.

Case: Girlfriend Collective

1. The organizational strategy is a differentiation approach, focused on sustainability and specialization. The operational strategies that best fit are high-quality processing and innovation.

2. Advantages of high-quality processing and innovation include the ability to compete with quality and product design. Potential disadvantages are the higher costs and lower productivity of the specialized production process.

3. Short-term impacts on the garment industry are likely to be minimal, as they are a small portion of the market. However, as word spreads of their sustainable approach and good working conditions, the appeal may expand beyond their initial target market, and the rest of the garment industry may be influenced to adopt more sustainable product designs.

In the short-term, an increased demand for recycled products is a positive, as it diverts materials from landfills. However, as demand increases, recycled materials may become more expensive and more difficult to obtain in the required quantities.

A higher labor requirement means more jobs, and the higher pay means a better standard of living for a community.

The effect on profit depends on many factors, including demand, price, labor cost, competitive pressure, availability of materials, and length of the supply chain. Productivity is relatively lower, and costs relatively higher, than in more automated garment producers. Specialized products generally also command higher prices. Process improvements can reduce costs. As demand increases, however, new competitors enter the market, exerting a downward pressure on prices.

4.   As noted in the case, it costs more to prepare recycled plastics for use as yarn than using brand-new plastic bottles. Paying workers higher wages also increases the cost of inputs. Considered in isolation, sustainability measures negatively impact productivity. However, management has to consider not just monetary profit, but the effect on all stakeholders. The ethical framework presented in chapter 1 can be used to guide decisions.

Operations Tour: The U.S. Postal Service

1.   The U.S. Postal Service is a very large organization and processes a large volume of mail using very expensive sorting, scanning, and barcoding equipment. Because this equipment is designed to process very large volumes of mail, if the Postal System does not have large volumes of mail to process, its productivity will decline.

2.   The new automated processing equipment, optical readers, and barcode readers resulted in improvements in productivity. In addition, reorganization efforts, which included elimination of layers of management, overhead positions, and certain programs resulted in significant cost reductions, which also contributed to the improvement of productivity.

3.   Competition from other methods of delivering information has caused the USPS to rethink their market. In addition, with added competition from UPS and FedEx, USPS will have to reestablish what they do best. Delivery companies such as FedEx and UPS that offer speedy delivery and package tracking gave businesses and individual customers an alternative besides the U.S. Postal Service. In addition, electronic communication, e-mails, and fax machines provided alternative means of communication for individuals and businesses that reduced U.S. Postal System's demand. Instead of direct-mail advertising, many companies began to use cable TV advertising because cable TV advertising had become more affordable for small and medium size companies.

4.   The U.S. Postal Service developed the following strategies to become more competitive against the new threats it was facing:

   a.   Reorganization—elimination of layers of management and overhead positions, elimination of certain programs.

   b.   Seeking ways to reduce costs and eliminate waste.

   c.   Emphasizing quality, customer service, and customer convenience.

5.   The USPS's changes resulted in the following: Costs were cut because layers of management were eliminated and overhead positions were cut by about 30,000. Processing and mail delivery at major postal facilities were improved. Expanded retail hours, a more user-friendly Domestic Manual, and new services to meet specific mailer needs attracted new customers. The result was a reduction in USPS's projected deficit. It appears (based on the January 2012 OMB Scorecard on Sustainability/Energy) that USPS may have cut costs associated from reduced water and energy usage due to sustainability initiatives also.

6.   The increased use of e-mail will result in reduction of using traditional mailing, which in turn will reduce the demand for the U.S. Postal System, resulting in a possible decline in its productivity.

7.   The use of standard shipping containers and flat-rate mailers helped the U.S. Postal System meet specific mailer needs and to simplify its complex rate structure.