TEACHING PLAN: OPERATIONS MANAGEMENT

SCHOOL: ASOM		ACADEMIC SESSION: 2021 – 2022			BBA 6TH SEMESTER FOR STUDENTS' BATCH: 2019
1	Course code	MGTB-604			
2	Course Title	Operations Management			
3	Credits	4			
4	Learning Hours		Contact Hours	60	
			Assessment	20	
			Guided Study	20	
			Total hours	100	
5	Course Objective	To equip the students with the skills to operate a computer and learn its application in corporate functioning. 1. To learn about Operations management 2. To learn about Facilities planning 3. To learn about Capacity planning 4. To learn about Operations planning 5. To understand Operations control			
6	Course Outcomes	After completing the course, the students will be able to: 1. Comprehend the significance and application of Operations Management 2. Understand different types of processes and requirements in production and service-based environment 3. Collect the required data, do analysis, and do decision making based on the results of the analysis 4. Become familiar with modern day requirements and trends in production and service-based environment			
7	Outline syllabus:				

7.01	Unit	Section	Introduction	Reference Number	Teaching Methods
7.02	Unit I	(a)	Operations management - meaning, definitions, scope, and objectives	T1-Page 1-8 https://www.youtube.com/watch?v=Opr3a895iWs	Presentation and Computer Lab demonstration
		(b)	the interaction of operations management with other areas	T1-Page 9-12 https://www.youtube.com/watch?v=DEuzzLled6k	Presentation and Computer Lab demonstration
		(c)	manufacturing and non-manufacturing operations and their characteristics.	T1-Page 13 https://www.youtube.com/watch?v=DEuzzLled6k	Presentation and Computer Lab demonstration
		(d)	Caselet 1	Check under the heading Caselets	Presentation and Computer Lab demonstration
7.03	Unit II	(a)	Facilities planning - plant location - factors determining plant location	T1-Page 22-32 https://www.youtube.com/watch?v=XWeVn6Tt1Ag&list=PLIVUEy5yGD1xeIdl	Presentation and Computer Lab demonstration

				E8i5TfqWTL8wI4fWO&index=6	
		(b)	plant layout—process layout and product layout	T1-Page 42-56 https://www.youtube.com/watch?v=dLAi-Vslr5U&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=8	Presentation and Computer Lab demonstration
		(c)	materials handling – MRP - Principal equipment's.	T1-Page 120 https://www.youtube.com/watch?v=EaY6GHwcJSs&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=12	Presentation and Computer Lab demonstration
		(d)	Caselet 2	Check under the heading Caselets	Presentation and Computer Lab demonstration
7.04	**Unit III**	(a)	Capacity planning - estimation of capital requirements	T1-Page 121-123 https://www.youtube.com/watch?v=rMb7Q4ipDM0&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=5	Presentation and Computer Lab demonstration
		(b)	maintenance management—types of maintenance	T1-Page 205-211 https://www.youtube.com/watch?v=3SugEuEwJAo&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=14	Presentation and Computer Lab demonstration
		(c)	work-study - time and method study	T1-Page 179-191 https://www.youtube.com/watch?v=tCDmFdvzgy8&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=7	Presentation and Computer Lab demonstration
		(d)	work measurement, meaning, scope and importance.	T1-Page 192-194 https://www.youtube.com/watch?v=tCDmFdvzgy8&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=7	Presentation and Computer Lab demonstration

7.05	**Unit IV**	(a)	Operations planning and control	T1-Page 114-119 https://www.youtube.com/watch?v=ppBbbR_cIOM&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=11	Presentation and Computer Lab demonstration
		(b)	- Objectives of Operations planning— planning procedure	T1-Page 109 https://www.youtube.com/watch?v=ppBbbR_cIOM&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=11	Presentation and Computer Lab demonstration
		(c)	- Operations planning categories	T1-Page 109-111 https://www.youtube.com/watch?v=EtPWXu3qfkc&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=17	Presentation and Computer Lab demonstration
		(d)	Caselet 3	Check under the heading Caselets	Presentation and Computer Lab demonstration
7.06	**Unit V**	(a)	Operations control - Meaning, Importance and objectives	T1-Page 109-112 https://www.youtube.com/watch?v=xSQJqJBeZjU&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=10	Presentation and Computer Lab demonstration
		(b)	- Techniques of operations control.	T1-Page-144-152 https://www.youtube.com/watch?v=xSQJqJBeZjU&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=10	Presentation and Computer Lab demonstration
		(c)	Caselet 4	Check under the heading Caselets	Presentation and Computer Lab demonstration
8	**Course Evaluation**				
8.1	**CA: 40%**				
8.11	**Attendance**	5%			
8.12	**Assignment & Presentation**	20%			
8.15	**Class test**	15%			
8.16	**Any other**	--			

8.2	**MTE**	20%
8.3	**End-term examination: 40%**	
9	**Textbooks & References**	
9.1	**Textbook**	1. Production and Operations Management, S. Anil Kumar and N. Suresh, Second edition, 2008, New Age International (P) Ltd., Publishers 2. Chase: Operations Management for Competitive Advantage, Tata McGraw Hill, New Delhi.
9.2	**References**	1. Adam, E.E. and Ebert, R.J., 'Production and Operations Management' Prentice Hall of India, New Delhi 1995. 2. Chary, S.N., Production and Operations Management, Tata McGraw Hill, New Delhi 1989 3. Buffa, E.S., 'Modern Production Management', New York, John Wiley, 1987.
9.3	**Video References**	https://www.youtube.com/watch?v=Opr3a895iWs https://www.youtube.com/watch?v=DEuzzLled6k https://www.youtube.com/watch?v=dLAi-Vslr5U&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=8 https://www.youtube.com/watch?v=EaY6GHwcJSs&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=12 https://www.youtube.com/watch?v=rMb7Q4ipDM0&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=5 https://www.youtube.com/watch?v=3SugEuEwJAo&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=14 https://www.youtube.com/watch?v=tCDmFdvzgy8&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=7 https://www.youtube.com/watch?v=ppBbbR_cIOM&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=11 https://www.youtube.com/watch?v=EtPWXu3qfkc&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=17 https://www.youtube.com/watch?v=xSQJqJBeZjU&list=PLIVUEy5yGD1xeIdlE8i5TfqWTL8wI4fWO&index=10

Mapping of Outcomes v. Topics

Outcome no. → / Syllabus topic↓	1	2	3	4	5
Paper Code.Unit I (a)	✓				
Paper Code. Unit I (b)	✓				
Paper Code. Unit I (c)	✓				
Paper Code. Unit I (d)	✓				
Paper Code.Unit II (a)		✓			
Paper Code. Unit II(b)		✓			
Paper Code. Unit II(c)		✓			
Paper Code. Unit II(d)		✓			
Paper Code.Unit III (a)			✓		
Paper Code. Unit III(b)			✓		
Paper Code. Unit III(c)			✓		
Paper Code. Unit III(d)			✓		
Paper Code.Unit IV (a)				✓	

Paper Code. Unit IV(b)				✓	
Paper Code. Unit IV(c)				✓	
Paper Code. Unit IV(d)				✓	
Paper Code.Unit V (a)					✓
Paper Code. Unit V(b)					✓
Paper Code. Unit V(c)					✓

QUESTION BANK

1. Define Production/Operations Management
2. Differentiate between production management and operations management
3. What are the objectives of Operation Management?
4. What is the scope of Operation Management?
5. What are the functions/importance of Operations Management?
6. What are the different levels of decision making in Operation Management.?
7. What are the characteristics of modern production and operation management?
8. What are the factors affecting a plant's location and layout?
9. What is MRP, and how does it work?
10. What are MRP Input and Output?
11. What do you understand by Capacity and what are the different types of Capacities in OM?
12. What is meant by capacity planning and what is the process involved in capacity planning?
13. How is capacity requirement evaluated?
14. What is the importance of capacity planning?
15. What do you understand by Maintenance management and what are the different types of Maintenance?
16. What do you understand by operation planning and what are its objectives?
17. What is the importance of operation control and what are the limitations of production planning and control?

CASELETS

Caselet 1: STATE AUTOMOBILE LICENSE RENEWALS

Sanjay, manager of a metropolitan branch office of the state department of motor vehicles, attempted to perform an analysis of the driver's license renewal operations. Several steps were to be performed in the process. After examining the license renewal process, he identified the steps and associated times required to perform each step as shown in the table below.

State Automobile License Renewals Process Times

	Job	Average Time to Perform (Seconds)
1	Review renewal application for correctness	15
2	Process and record payments	30
3	Check file for violations and restrictions	60
4	Conduct Eye Test	40
5	Photograph applicant	20
6	Issue temporary license	30

Sanjay found that each step was' assigned to a different person. Each application was a separate process in the sequence shown in the exhibit. Sanjay determined that his office should be prepared to accommodate the maximum demand of processing 120 renewal applicants per hour.

He observed that the work was unevenly divided among the clerks, and that the clerk who was responsible for checking violations tended to shortcut her task to keep up with the other clerks. Long lines built up during the maximum demand periods.

Sanjay also found that general clerks who were each paid Rs.12.00 per hour-handled jobs 1,2,3, and 4. Job 5 was performed by a photographer paid Rs.16 per hour, Job 6, the issuing of temporary licenses, was required by state policy to be handled by a uniformed motor vehicle officer. Officers were paid Rs.18 per hour, but they could be assigned to any job except photography.

A review of the jobs indicated that job 1, reviewing the application for correctness, had to be performed before any other step. Similarly, job 6, issuing the temporary license, could not be performed until all the other steps were completed. The branch offices were charged Rs.20 per hour for each camera to perform photography.

Sanjay was under severe pressure to increase productivity and reduce costs, but the regional director of the department of motor vehicles also told him that he had better accommodate the demand for renewals. Otherwise, "heads would roll."

Questions

1. What is the maximum number of applications per hour that can be handled by the present configuration of the process? 6.5 hr for 120 license
2. How many applications can be processed per hour if a second clerk is added to check for violations? 22 licenses in one hour
3. Assuming the addition of one more clerk, what is the maximum number of applications the process can handle? 24 licenses
4. How would you suggest modifying the process to accommodate 120 applications per hour?

(**Source:** P. R. Olsen, W. E. Sasser, and D. D. Wyckoff, *Management of Service Operations: Text, Cases, and Readings,* Pp. 95-96, @ 1978.)

Caselet 2: KAMALA

Kamala had worked for the same Fortune 500 Company for almost 15 years. Although the company had gone through some tough times, things were starting to turn around. Customer orders were up, and quality and productivity had improved dramatically from what they had been only a few years earlier due to a company-wide quality improvement program. So, it comes as a real shock to Kamala and about 400 of her co-workers when they were suddenly terminated following the new CEO's decision to downsize the company.

After recovering from the initial shock, Kamala tried to find employment elsewhere. Despite her efforts, after eight months of searching, she was no closer to finding a job than the day she started. Her funds were being depleted and she was getting more discouraged. There was one bright spot, though: She was able to bring in a little money by mowing lawns for her neighbours. She got involved quite by chance when she heard one neighbour remark that now that his children were on their own, nobody was around to cut the grass. Almost jokingly, Kamala asked him how much he'd be willing to pay. Soon Kamala was mowing the lawns of five neighbours. Other neighbours wanted her to work on their lawns, but she didn't feel that she could spare any more time from her job search.

However, as the rejection letters began to pile up, Kamala knew she had to make an important decision in her life. On a rainy Tuesday morning, she decided to go into business for herself taking care of neighbourhood lawns. She was relieved to give up the stress of job hunting, and she was excited about the prospects of being her boss. But she was also fearful of being completely on her own. Nevertheless, Kamala was determined to make a go of it.

At first, business was a little slow, but once people realized Kamala was available, many asked her to take care of their lawns. Some people were simply glad to turn - the work over to her; others switched from professional lawn care services. By the end of her first year in business, Kamala knew she could earn a living this way. She also performed other services such as fertilizing lawns, weeding gardens, and trimming shrubbery. The business became so good that Kamala hired two part-time workers to assist her and, even then, she believed she could expand further if she wanted to.

Questions

1. In what ways are Kamala's customers most likely to judge the quality of her lawn care services?

2. Kamala is the operations manager of her business. Among her responsibilities are forecasting,

inventory management, scheduling, quality assurance, and maintenance.

(*a*) What kinds of things would likely require forecasts?

(*b*) What inventory items does Kamala probably have? Name one inventory decision she has to make periodically.

(*c*) What scheduling must she do? What things might occur to disrupt schedules and cause Kamala, to reschedule?

(*d*) How important is quality assurance to Kamala's business? Explain.

(*e*) What kinds of maintenance must be performed?

3. What are some of the trade-offs that Kamala probably considered relative to:

(*a*) Working for a company instead of for herself?

(*b*) Expanding the business?

4. The town is considering an ordinance that would prohibit putting grass clippings at the curb for pickup because local landfills cannot handle the volume. What options might Kamala consider if the ordinance is passed? Name two advantages and two drawbacks of each option.

[**Source:** *Production/Operations Management by William J.Stevenson, Irwin/McGraw-Hill*]

Caselet 3: BRUEGGER'S BAGEL BAKERY

Bruegger's Bagel Bakery makes and sells a variety of bagels, including plain, onion, poppy seed, and cinnamon raisin, as well as assorted flavors of cream cheese. Bagels are the major source of revenue for the company.

The bagel business is a Rs.3 billion industry. Bagels are very popular with consumers. Not only are they relatively low in fat, they are filling, and they taste good! Investors like the bagel industries because it can be highly profitable: it only costs about Rs.10 to make a bagel, and they can be sold for Rs.50 each or more. Although some bagel companies have done poorly in recent years, due mainly to poor management, Bruegger's business is booming;

It is number one nationally, with over 450 shops that sell bagels, coffee, and bagel sandwiches for takeout or on premise consumption. Many stores in the Bruegger's chain generate an average of Rs.800, 000 in sales annually.

Production of bagels is done in batches, according to flavor, with each flavor being produced on a daily basis. Production of bagels at Bruegger's begins at a processing plant, where the basic ingredients of flour, water, yeast, and flavorings are combined in a special mixing machine. After the dough has been thoroughly mixed, it is transferred to another machine that shapes the dough into individual bagels. Once the bagels have been formed, they are loaded onto refrigerated trucks for shipping to individual stores. When the bagels reach a store, they are unloaded from

the trucks and temporarily stored while they rise. The final two steps of processing involve boiling the bagels in a kettle of water and malt for one minute, and then baking the bagels in an oven for proximately 15 minutes. The process is depicted in Figure 1.

Quality is an important feature of a successful business. Customers judge the quality of bagels by their appearance (size, shape, and shine), taste, and consistency. Customers are also sensitive to the service they receive when they make their purchases. Bruegger's devotes careful attention to quality at every stage of operation, from choosing suppliers of ingredients, careful monitoring of ingredients, and keeping equipment in good operating condition to monitoring output at each step in the process. At the stores, employees are instructed to watch for deformed bagels and to remove them when they find them. (Deformed bagels are returned to the main plant where they are sliced into bagel chips, packaged, and then taken back to the stores for sale, thereby reducing the scrap rate.) Employees who work in the stores are carefully chosen and then trained so that they are competent to operate the necessary equipment in the stores and to provide the desired level of service to customers.

The company operates with minimal inventories of raw materials and inventories of partially completed bagels at the plant and very little inventory of bagels at the stores. One reason for this is to maintain a high degree of freshness in the final product by continually supplying fresh product to the stores. A second reason is to keep costs down; minimal inventories mean less space is needed for storage.

Questions

1. Bruegger's maintains relatively little inventory at either its plants or its retail stores. List the benefits and risks of this policy.
2. Quality is very important to Bruegger's.

(*a*) What features of bagels do customers look at to judge their quality of bagels?

(*b*) At what points in the production process do workers check bagel quality?

(c) List the steps in the production process, beginning with purchasing ingredients, and ending with the sale, and state how quality can be positively affected at each step.

3. Which inventory models could be used for ordering the ingredients for bagels? Which model do you think would be most appropriate for deciding how many bagels to make in a given batch?
4. Bruegger's has bagel-making machines at its plants. Another possibility would be to have a bagel-making machine at each store, what advantages does each alternative have?

(**Source:** production/Operations Management, William J.Stevenson,)

Caselet 4: AN AMERICAN TRAGEDY: HOW A GOOD COMPANY DIED

The Rust Belt is back. So exports surge, long-moribund industries glow with new found profits, and unemployment dips to lows not seen in a decade. But in the smokestack citadels, there's disquiet. Too many machine tool and auto parts factories are silent; too many U.S. industries still can't hold their own.

What went wrong since the heyday of the 1960s? That's the issue Max Holland, a contributing editor of The Nation, takes up in his nutsy-boltsy but fascinating study, When the Machine Stopped. (Max Holland, When the Machine Stopped: A Contemporary Tale from industrial America (Boston, Mass: Harvard Business School Press, 1988)

The focus of the story is Burg master Corp., a Los Angeles-area machine tool maker founded in 1944 by Czechoslovakian immigrant Fred Burg. Holland's father worked there for 29 years, and the author interviewed 22 former employees. His shop-floor view of this small company is a refreshing change from academic treatises on why America can't compete.

The discussion of spindles and numerical control can be tough going. But Holland compensates by conveying the pany's early days and the disgust and cynicism accompanying its decline. Moreover, the fate of Burgmaster and its brethren is crucial to the U.S. industrial economy: Any manufactured item is either made by a machine tool.

Producing innovative turret drills used in a wide variety of metalworking tasks, Burgmaster was a thriving enterprise by 1965, when annual sales amounted to about Rs. 8 million. The company needed backing to expand, however, so it sold out to Buffalo-based conglomerate Houdaille Industries Inc. Houdaille was in turn purchased in a 1979 leveraged buyout led by Khlberg Kravis Roberts & Co. By 1982, when debt, competition, and a sickly machine-tool market had battered Burgmaster badly, Houdaille went to Washington with a petition to withhold the investment tax credit for certain Japanese-made machine tools.

Thanks to deft lobbying, the Senate passed a resolution supporting Houdaille's position, but President Regan refused to go along. Houdaille's subsequent attempt to link Burgmaster up with a Japanese rival also failed, and Burgmaster was closed.

Holland uses Burgmaster's demise to explore some key issue of economic and trade policy. Houdaille's charge that a cartel led by the Japanese government had injured U.S. toolmakers, for example, became a rallying point for those who would blame a fearsome Japan Inc. for the problems of U.S. industry.

Holland describes the Washington wrangling over Houdaille in painful detail. But he does show that such government decisions are often made without much knowledge of what's going

on in industry. He shows, too that Japanese producers succeeded less because of government help than because of government helps than because they made better, cheaper machines.

For those who see LBOs as a symptom of what ails the U.S. economy, Holland offers plenty of ammunition. He argues persuasively that the LBO CRIPPLED Burgmaster by creating enormous pressure to generate cash. As Burgmaster pushed its products out as fast as possible, he writes, it routinely shipped defective machines. It promised customers features that engineers hadn't yet designed. And although KKR disputes the claim, Holland concludes that the LBO choked off Burgmaster's investment funds just when foreign competition made them most necessary. As for Houdaille, it was recapitalized and sold to Britain's Tube Investments Group. But Burgmaster's problems had started even before the LBO. Holland's history of the company under Houdaille is a veritable catalog of modern management techniques that flopped. One of the most disastrous was a system for computerizing production scheduling that was too crude for complex machine-tool manufacturing. Holland gives a dramatic depiction of supply snafus that resulted in delays and cost increases.

As an independent company, "Burgmaster thrived because the Burgs knew their business," Holland writes. Their departure under Houdaille was followed by an "endless and ultimately futile search for a better formula!' But he concludes: "No formula was a substitute for management involvement on the shop floor!'

In the end, however, Holland puts most of the blame for the industry's decline on government policy. He targets tax laws and macroeconomic policies tbat encourage LBOs and speculation instead of productive investment. He also criticizes Pentagon procurement policies for favoring exotic, custom machines over standard, low-cost models. This adds up to an industrial policy, Holland writes-a bad one.

The point is well taken, but Holland gives it excessive weight. Like their brethren in Detroit and Pittsburgh, domestic tool-makers in the 1970s were too complacent when imports seized the lower end of the product line. The conservatism that had for years served them in their cyclical industry left them ill-prepared for change. Even now some of the largest U.S. toolmakers are struggling to restructure. Blame the government, yes. But blame the industry, too.

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Questions

1. Write a brief report that outlines the reasons (both internal and external) for Burgmaster's demise, and whether operations management played a significant role in the demise.

(**Source:** Reprinted from April 17 , 1989 issue of *Business Week* by special permission, copyright @ 1989.by The McGraw-Hill companies).

Caselet 5: HOME-STYLE COOKIES

The Company

The Lew-Mark Baking Company is located in a small town in western New York State. The bakery is run by two brothers. Lew and Mark, who formed the company after they purchased an Archway Cookie franchise. With exclusive rights in New York and New Jersey, it is the largest Archway franchise. The company employs fewer than 200 people, mainly blue collar workers, and the atmosphere is informal.

The Product

The company's only product is soft cookies, of which it makes over 50 varieties. Larger companies, such as Nabisco, Sunshine, and Keebler, have traditionally produced biscuit cookies, in which most of the water has been baked out, resulting in crisp cookies. Archway cookies have no additives or preservatives. The high quality of the cookies has enabled the company to develop
a strong market niche for its product.

The Customers

The cookies are sold in convenience stores and supermarkets throughout New York and New Jersey. Archway markets its cookies as "good food" no additives or preservatives and this appeals to a health-conscious segment of the market. Many customers are over 45 years of age, and prefer a cookie that is soft and not too sweet. Parents with young children also buy the cookies.

The Production Process

The company has two continuous band ovens that it uses to bake the cookies. The production process is called a batch processing system. It begins as soon as management gets orders from distributors. These orders are used to schedule production. At the start of each shift, a list of the cookies to be made that day is delivered to the person in charge of mixing. That person checks a master list, which indicates the ingredients needed for each type of cookie, and enters that information into the computer. The computer then determines the amount of each ingredient needed, according to the quantity of cookies ordered, and relays that information to storage silos located outside the plant where the main ingredients (flour, sugar, and cake flour) are stored. The ingredients are automatically sent to giant mixing machines where the ingredients are combined with proper amounts of eggs, water, and flavorings. After the ingredients have been mixed, the batter is poured into a cutting machine where it is cut into individual cookies. The cookies are

then dropped onto a conveyor belt and transported through one of two ovens. Filled cookies, such as apple, date, and raspberry, require an additional step for filling and folding.

The nonfilled cookies are cut on a diagonal rather than round. The diagonal-cut cookies require less space than straight-cut cookies, and the result is a higher level of productivity. In addition, the company recently increased the length of each oven by 25 feet, which also increased the rate of production.

As the cookies emerge from the ovens, they are fed onto spiral cooling racks 20 feet high and 3 feet wide. As the cookies come off the cooling racks, workers place the cookies into boxes manually, removing any broken or deformed cookies in the process. The boxes are then wrapped, sealed, and labeled automatically.

Inventory

Most cookies are loaded immediately onto trucks and shipped to distributors. A small percentage is stored temporarily in the company's warehouse, but they must be shipped shortly because of their limited shelf life. Other inventory includes individual cookie boxes, shipping boxes, labels, and cellophane for wrapping. Labels are reordered frequently, in small batches, because FDA label requirements are subject to change, and the company does not want to get stuck with labels it can't use. The bulk silos are refilled two or three times a week, depending on how quickly supplies are used.

Cookies are baked in a sequence that minimizes downtime for cleaning. For instance, lightcolored cookies (e.g., chocolate chip) are baked before dark-colored cookies (e.g., fudge), and oatmeal cookies are baked before oatmeal raisin cookies. This permits the company to avoid having to clean the processing equipment every time a different type of cookie is produced.

Quality

The bakery prides itself on the quality of its cookies. A quality control inspector samples cookies randomly as they come off the line to assure that their taste and consistency are satisfactory, and that they have been baked to the proper degree. Also, workers on the line are responsible for removing defective cookies when they spot them. The company has also installed an X-ray machine on the line that can detect small bits of metal filings that may have gotten into cookies during the production process. The use of automatic equipment for transporting raw materials and mixing batter has made it easier to maintain a sterile process.

Scrap

The bakery is run very efficiently and has minimal amounts of scrap. For example, if a batch is mixed improperly, it is sold for dog food. Broken cookies are used in the oatmeal cookies. These practices reduce the cost of ingredients and save on waste disposal costs. The

company also uses heat reclamation: The heat that escapes from the two ovens is captured and used to boil the water that supplies the heat to the building. Also, the use of automation in the mixing process has resulted in a reduction in waste compared with the manual methods used previously.

New Products

Ideas for new products come from customers, employees, and observations of competitors' products. New ideas are first examined to determine whether the cookies can be made with existing equipment. If so, a sample run is made to determine the cost and time requirements. If the results are satisfactory, marketing tests are conducted to see if there is a demand for the product.

Potential Improvements

There are a number of areas of potential improvement at the bakery. One possibility would be automate packing the cookies into boxes. Although labour costs are not high, automating the process might save some money and increase efficiency. So far, the owners have resisted making this change because they feel an obligation to the community to employ the 30 women who now do the boxing manually. Another possible improvement would be to use suppliers who are located closer to the plant. That would reduce delivery lead times and transportation costs, but the owners are not convinced that local suppliers could provide the same good quality. Other opportunities have been proposed in recent years, but the owner rejected them because they feared that the quality of the product might suffer.

Questions

1. Briefly describe the cookie production process.
2. What are two ways that the company has increased productivity? Why did increasing the length of the ovens result in a faster output?
3. Do you think that the company is making the right decision by not automating the packing of cookies? Explain your reasoning. What obligation does a company have to its employees in a situation such as this? What obligation does it have to the community? Is the size of the town a factor? Would it make a difference if the company was located in a large city? Is the size of the company a factor? What if it was a much larger company?
4. What factors cause Lew-mark to carry minimal amounts of certain inventories? What benefits results from this policy?
5. As a consumer, what things do you consider in judging the quality of cookies you buy in a supermarket?
6. What advantages and what limitations stem from Lew-Mark's not using preservatives in

cookies?

7. Briefly describe the company's strategy.

PROJECTS (To be given to a group of students)

Projects I

Visit a fast food restaurant like Pizza hut, Pizza corner to understand the concept of this chapter by getting the information for the following questions.

1. Identify the type of production system followed.
2. Check how production system is managed.
3. Find out utilisation of the resources namely manpower, capacity and material.
4. How the customer services is rendered [feedback system exist or not]

Projects II

FAST FOOD RESTAURANT VISIT: Get the information for the following questions:

1. The locational factors considered for establishing the enterprise.

2. Strategy adopted for identifying the location [Ex: factor rating, load, distances method etc.]

3. Type of layout.

4. Physical facilities existing [line lighting ventilators, type of building etc.]

Project III

FAST FOOD RESTAURANT VISIT: Get the information for the following questions:

1. Material handling in the restaurant for production and services.

2. Type of material handling equipment used for production and services.

3. Utilisation of material handling equipment.

Project IV

FAST FOOD RESTAURANT VISIT: Get the information for the following questions:

1. Material Requirement Plan for procurements of Raw material.

2. Purchase procedures adopted.

3. Preparation of Bill of Material.

4. The supplier or vendors selection.

5. In process, spares and etc.

6. Adaptation of Just In Time Manufacturing Technique.