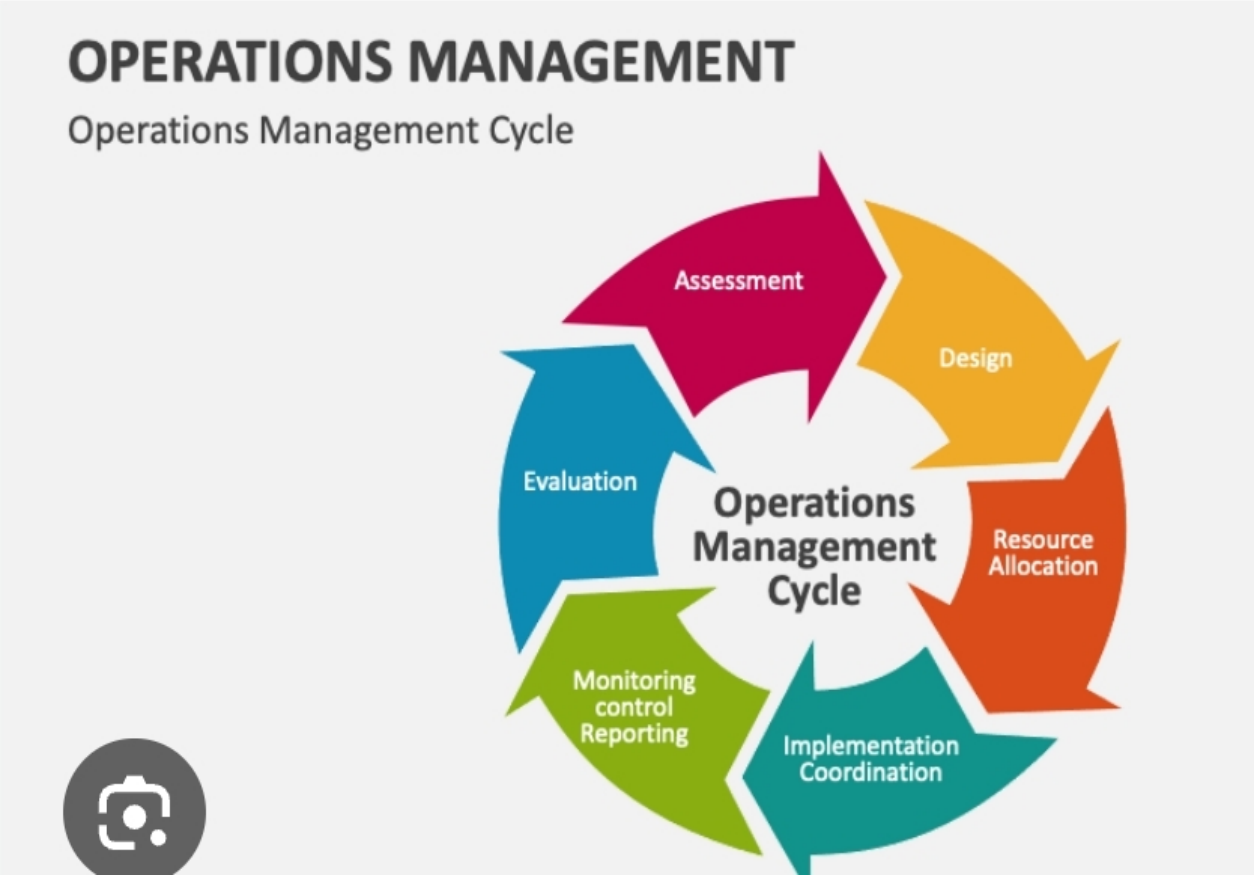
Study Manual on

OPERATIONS MANAGEMENT





OPERATIONS MANAGEMENT

Chapter One

Operations and Operations Management … … … … … 11

1.0 Introduction

1.1 The concept of Operations and Operations Management

1.1.1 The Concept of “Process”

1.2 Forms of Processes – Service Operation, Manufacturing operations

1.2.1 Characteristics of Services and Manufacturing operations

1.3 Differences between Services and manufactured goods

1.4 The roles of the Operations Manager

1.5 Self-Test Questions

Chapter Two

Decision Making in Operations (Service and Manufacturing)… … 18

2.0 Introduction

2.0.1 The Break-even Analysis

2.0.2 Finding the Break-even Quantity

2.1 Theories on Decision Marking

2.2 Forms and Conditions of Decision Making

2.2.1 Decision making Under uncertainty

2.2.2 Decision making Under risk

3.4 Value of Perfect Information

3.5 Decision Trees

3.6 Self Test Questions

Chapter Three

Production and Productivity … … … … … … … 27

3.0 Introduction

3.1 The concept of Resources (Input)

3.2 The Resource Base Theory

3.3 Productivity

3.3.1 Calculation of Productivity

3.4. Global Competition

3.5 Self-Test Questions

Chapter Four

Operations strategy … … … … … … … … … 32

4.0 Introduction

4.1 The concept of operations strategy

4.2 Corporate Strategy

4.2.1 Ways of developing corporate strategy

4.2.2 Environmental scanning

4.2.3 Market Analysis

4.3 The role of Management in strategy implementation

4.4 Self Test Questions

Chapter Five

New Product and Service Development … … … … … 40

5.0 Introduction

5.1 New Product/Service Development

5.1.0 New Product/Service development strategy

5.1.1 Types of new product/Service development

5.2 The Challenges of new innovation product/service

5.2.1 Why new Products and Services Fail

5.3 The Service/Product Definition

5.4 Service package

5.5 Quality Functionality Development

5.6. Why firms develop new products and services

5.7 Self Test Questions

Chapter Six

Process Design Strategy and Associated Concepts … … … 56

6.0 Definition of Process Design

6.1 Major Process Design Decisions

6.2 Process Structure in Service

6.3 Process Complexity, Divergence and Flow

6.4 Process Structure in Manufacturing

6.5 Concepts Associated with Manufacturing

6.5.1 Mass Customization

6.5.2 Diversification

6.5.3 Specialization

6.5.4 Standardization and Simplification

6.6 Self Test Questions

ABBREVIATIONS AND ACRONYMS

ABC	Activity Based Costing
ABC	Inventory Classification based on value and Dollar worth
CEO	Chief executive Officer
CRM	Customer Relationship Management
CSR	Corporate Social Responsibility
EBQ	Economic Batch Quantity
EDI	Electronic Data Interchange
EOQ	Economic order Quantity
ERP	Enterprise Resource Planning
IDF	Independent Demand Forecast
KPI	Key performance Indicator
MRP	Material Requirement planning
QDM	Quantity Discount Model
QR	Quick Response (Speed Based Philosophy)
ROI	Return on Investment
SCM	Supply Chain Management

GLOSSARY OF TERMS

Demand	Request backed with readiness to pay
Design	structural Construct and ecstatic outlook
Innovation	New invention or discovery /application

Innovation Diffusion	The rate a new discovery expands and is accepted
Investment	Input of a resource e.g. money for profit or return
Offering	Company product or service brought in for sell
Quality	Ability to conform to standards or meet expectations
Price	A traded off for want
Product	Anything that is offered to the market to meet want/need
Production	Creation of utility (goods or services
Pull Production	Production triggered by customer demand
Push production	Production in anticipate of demand
Resource	inputs – money, men, material, machines, management
Services products	Are intangible, inseparable, variable and perishable

CHAPTER ONE

OPERATIONS AND OPERATION MANAGEMENT

1.0 Introduction

We all perform some activities with ends in view. These activities are sequenced to lead to a desired outcome. This outcome is a combination of a sequence of activities that form a process. Here, the process becomes an operation which is a set of activities performed to reach a desired outcome. The outcome can create value/satisfaction – service or it can produce tangible materials (products) e.g. books, computers and other tangible goods. In doing this, certain activities were performed. i.e. there were a series of processes carried out to create the value (product) or satisfaction (service e.g. barbing). These processes are called operations. Hence, service operations, manufacturing operations.

1.1 The Concept of Operations and Operation Management

An operation is a sequence of activities, tasks and processes performed to create value or achieve a desired outcome. An Operation is a performance activity that involves various processes, e.g. reading, writing, listening are the activities involved in the learning process. Teaching is an operation that involves other processes/activities like talking, demonstration, explanation, listening, praise etc.

From the foregoing, operation management is a planned and deliberate move to ensure a sequence of activities and processes yield the desired result (Path worth and Delock, 2008).

According to van Hoek (2009), Operations management concerns itself with how, the means and strategies people and organizations

adopt to process raw materials into finished goods (manufacturing), create services for the usage of consumers, on daily basis. Strategies and means are basically the main functions which corporate organizations apply towards actualizing their corporate goals and objectives. An operation is an expression of strategies.

Operations management is a process of coordinating, planning, controlling, articulating and combining human and material resources available to an organization to create value e.g. return on investment (ROI) for shareholder, value/satisfaction for customers.

There are various forms of operations e.g. manufacturing operations where we combine human and material resource to create tangible goods. Service operations, where we carry out some sequence of activities to create satisfaction without resulting to ownership of anything e.g. Lecturing, Preaching, Barbing, Dry cleaning and Nursing.

1.1.1 The Concept "Process"

We have mentioned severally the concept "PROCESS" in our discussion.

What then is a process?

What is a Process? (A sequence of activities or tasks to achieve a goal)

Is a set of tasks, activities performed with the aim of achieving an outcome. It can be taken to be the various steps, operations, tasks or functions that involve the combination of diverse inputs through transformation steps, turning them into finished products which consumers or customers value and are willing to purchase (Products)

Process is the journey raw material undergo to be transformed to finished goods. It can be a service process that creates utility to the recipient e.g. barbing, pedicure and manicure. The services of Doctors, lawyers, teachers under take various activities and processes to build customer satisfaction. .

Business activities are combinations of diverse forms of processes. This therefore informs the reasons why it is necessary to explain the concept of process as a peculiar operation unlike the organisation at large. This is because an organisation process approach is very unique in terms of how other organizations operate.

There are departmental objectives and such objectives are accomplished by using the resources that are allocated for the purpose of accomplishing such while employees and managers are held accountable for corporate performance. Therefore processes, like bill preparations, may be operative in accounting department as the case may be. Process as a concept, though may be more cost demanding due to its nature and his its own corporate defined aims. Such includes an appropriate work flow which does not limit itself within departmental boundaries. It therefore needed inputs in terms of resources which can be generated from the other departments.In product development for instance, it involves combination and joint efforts of other departments in the same organisation like, operations, engineering and marketing. Furthermore, corporate organizations have come to understand that they can rightly utilize their unique effective processes as vital tool and strength in the competitive business arena.

1.2 Forms of Processes (Service Operation, Manufacturing Processes)

There are various forms of processes in operations management that exists between organization's buyers and the suppliers. This relationship can be close or distant (adversarial, collaborative etc.) These four main or core processes in operations management are:

a **Customer Relationship Process**. In most cases, this is also called customer relationship management. It locates, builds and attracts relationships with outside customers and spearheads the arrangements of orders which customers made. Long established roles like marketing and sales can also be an aspect of the process. A typical example of customer relationship process is where a customer is involved in the process of determining what he wants.

b **New Service/Product Development Process**.

This process focuses on designing and development of new products or services. The development of the products or services for customers can be done based on their needs and from the information that are gathered from the markets at large based on the customer relationship existing between the organisation and the customers. A good example on the area of new product/service development process centre on advertisement design and in the process of planning.

c **Order Fulfillment Process**: This deals with the necessary operations or activities that are very necessary in order to produce a product and consequently delivers or makes sure that the product is delivered to

the customers. A good example of this is production process in advertising agency.

d **Supplier Relationship Process**: This process deals with selecting the suppliers that supply materials, information, services and quickens the availability of these into the organization. Good working relationship with such suppliers is a very good strategy towards ensuring the sufficient value is added to the organization's products or services. Such products or services must be affordable, delivered within the lead time.

Also ideas sought from other relevant suppliers in the course of developing a new product or service also constitute ways of creating or adding value in the process.

1.2.1 Characteristics of Services and Manufacturing operations

a. Services are intangible in form while manufactured goods are tangible and are physical in nature.

b. Services are not storable hence we say services are perishable e.g. seats on a flight to a destination. Where there are no shows, the unoccupied seats have been lost as they cannot be retrieved.

1.3 Differences between Services and manufactured goods

Recent studies in operations management has shown that there are differences and similarities in the characteristics of pure service oppression and pure manufacturing processes.

Focal Point	Service sector	Manufacturing Sector
Operations	Humanistic Volatile, uncertain, labour intensive Decentralized Difficult to balance resources with available demand Customer is part of the service process	Technocratic, Stable, Predictable, capital intensive Centralized Easy to balance resources available with demand Customer is isolated from the process
Product or Service	Simultaneous production and consumption Performed on individual basis Intangible, Perishable Demand is time dependent no back orders Cannot be inventoried Cannot be transported Cannot be mass produced	May b e produced ahead Mass produced and standardized Physical, durable Can have back orders Can b e inventoried Can be Transported Can be mass produced
Employees	Loosely supervised Must be able to interact with public High personal judgment required High interaction with customer Wages may be based on h/ours worked	Closely supervised Need technical skills only Low personal judgment required Low or no contact with customers Wages may be based on output
Response time/Location	Short	Long

	In local markets Near customers	National or International markets Near supply, labour or transportation

Adapted from Benton Jr. (2012)

Self Test Question

1. What is a process? Differentiate a manufacturing process from a service
2. List ten services you know. How have such contributed to the economy of your nation
3. What factors would you consider in locating a manufacturing outfit.

CHAPTER TWO

DECISION MAKING IN OPERATIONS (SERVICE AND MANUFACTURING)

2.0 Introduction

Supply chain managers face various challenges in their operations. These require choice of alternative lines of action or a shift from the normal. This calls for decision taking where the manager makes a choice of action that benefits the organization and its shareholders. The conditions may be (1) Under certainty, (2) under uncertainty (3) under risk conditions.

Decision taking is a process of choosing an alternative line of action in the face of competing alternatives. Sound decision taking is a product of experience and exposure. Among challenging decisions for supply chain managers are “how do we enter the already saturated market? What forms of adverts do we undertake? What price range do we charge for products and services? Who should be our key customers? How do we differentiate our products and services? These are some of the challenging questions that require decision taking.

Most of these situations require actions in very uncertain conditions and environment. Others are decisions managers ought to take under risk condition. In which ever form, the manager needs a point (decision) that benefits him more and stands by it.

2.0.1 Break-Even Analysis

In order to value or access a concept in respect of a new service or product and to know the performance of already existing product, it is very important to know if that product has already broken based on the level of its sales in the market. The break-even point is at the moment the total revenues and total costs are equal. The application of this concept is referred to as the break-even analysis. This is also applied in comparing various processes in order to find or determine the level whereby two opposite applications can have the same total costs.

Evaluating Services or Products

This can be kick-started using the initial aim; which is to access the payback capacity or either new or existing products.

The method is to assist a manager respond to such questions as stated below:

a. Is the expected degree of sales volume of the product or service enough to create or achieve a break-even, that is, there is no profit made nor losses recorded.

b. What will be the lowest variable cost per unit to have break even based on recent prices and forecasts of sales made.

c. What will be lowest level of fixed cost to achieve a break even?

d. What effects do the price levels have on the break-even volume?

The ideology of break-even analysis is anchored on the belief that the various costs that have to do with the production of goods and services are subject to be divided into two types which are; the variable and fixed costs.

Variable cost can be defined as the portion of that total cost which differs or varies straight with the degree of output such as: materials cost per unit, labour and some aspects of the overhead. Thus if one

allows Q to be equal to the amount of customers that were attended to or represents the amount of goods produced in a year, then total variable cost will be = ^{c}Q. The fixed cost, F represents that part of the total cost which remains unchanged irrespective of not being constant on the degrees of output which includes: the yearly cost of purchases new facilities and equipment like; depreciation, interest, insurance and tax matters. Others include; utilities, salaries as well as the parts of the sales. Therefore the total cost in terms of producing a product or service is equivalent to fixed cost including variable costs time volume, which is:

$$\text{Total Cost} = F + {}^{c}Q$$

The unit of variable cost is believed to be equal irrespective of how minute or big Q can be and therefore total cost is linear. Then where one assume that all outputs as produced are sold, it means that total yearly revenue is equivalent to revenue per unit sold, which is 'P' multiplied by the quantity sold or

$$\text{Total Revenue} = {}_{p}Q$$

So where total revenue is equal to total cost, then the break-even point will be as stated below:

$$_{p}Q = F + {}^{c}Q$$
$$(p - c)Q = Fn$$

$$Q = \frac{P}{a - c}$$

The break-even quantity can also be graphically found. This is because there are linear relationships between costs and revenues. This is established where there is a line crossing total revenue crossing the total cost line.

2.0.2 Finding the Break-Even Quantity

For instance a hospital is proposing a new approach towards rendering services which the cost is $200 for a patient. Thus the fixed cost in a year stands at $100,000, and the total variable costs of $100 is for a patient. What then is the break-even size for a service of this nature? To get the answer therefore, the usage of algebraic and graphic methods isapplied towards getting the answer.

Solution

The formula for the break-even quantity yields

$$Q = \frac{F}{p - c} = \frac{100{,}000}{200 - } = 1{,}000 \text{ patients}$$

In solving graphically, lines were plotted, where one is for costs while the other is for revenues. Since a line is determined by two points, the calculation of costs and revenues were determined by costs and revenues calculations in respect of two separate output levels.

The table below shows Q = O and Q = 2,000 being the results. Zero was picked as the original point due to the simplicity of plotting for total revenue (0) and the total cost (F) though any two sufficient spaced outputs could have been used.

QUANTITY (Patients) (Q)	TOTAL ANNUAL COST ($) (100,000 + 100Q)	TOTAL ANNUAL Revenue ($) (200Q)
0	100,000	0
2,000	300,000	400,000

The cost line passing through the points (0, 100,000) and (2,000, 300,000) is now drawn. The line of the revenue passes through (0, 0) and (2,000, 400,000).

2.0. 3.Preference Matrix

In circumstances where multiple criteria are difficult to be naturally brought together to become a one measure (like in dollars) is when decisions must usually be made. For instance when a manager is trying to take a decision concerning which of the two towns or cities to site a plant, must put into consideration the factors which cannot be quantified. Such factors are; workers attitudes in respect of work, the quality of life in the cities and the nature of reception within the two cities being considered. Hence the above vital factors cannot be set aside.

Preference matrix can be explained as a table which enables a manager to make rating of alternatives. This is based on many performance indices which can be rated on scale. Such scale can be from 1 (which is the worst possible) to 10 (the best possible) from 0 to 1, using the same scale to be applied in all the alternatives for one another or contrary to prearranged area.

Presented below is the performance criteria, weights and scores table where (1 = worst, 10 = best) for a thermal storage air conditioner being a new product.When just one new product is to be introduced by management and notices that the highest total score of any of the other product idea stands at 800. The question then is, should that organization focus or continue on manufacturing the product, which is the conditioner?

PERFORMANCE CRITERION	**WEIGHT (A)**	**SCORE (B)**	**WEIGHTED SCORE (A xB)**
Market potential	30	8	240
Unit profit margin	20	10	200
Operations compatibility	20	6	120
Competitive advantage	15	10	150
Investment requirement	10	2	20
Project risk	5	4	20
		Weighted score =	750

Looking at the sum of the weighted scores which stood at 750, there is short fall from the score of 800 which is for another product.

The **Decision Point** here is that Management should stop the idea of the thermal storage air-conditioner. Therefore the idea for another product is much better looking at the various criteria, while management was trying to bring in just one new product to the market during that time. Many managers are not usually comfortable with the preference matrix tool or strategy. This is because such compels or makes the managers to clearly present the various criteria weights first before looking at the other alternatives, even though at the end the real weights may not be really visible or clear.

2.1 Theories on Decision Marking (Decision Strategy)

Decision theory is another strategy operations managers can leverage on in their strategic operations, mostly when intended outcomes are associated with alternatives that are dicey and in great doubt. Rational managers take sound decisions and stand by it as a strategy to clear or overcome the state of uncertainty. This therefore gives managers in operations the strength on decisions that have to do with capacity, process, inventory and issues of locations regarding the uncertainties about future. Consequently, by application of decision theory strategies, a manager can comfortably make choices in the mist of alternatives based on the under-listed process strategies:

THE POSSIBLE ALTERNATIVES SHOULD BE LISTED AND EVALUATED.

1 List the programs or the likely events that will occur.

2 Compute for each alternative the payoff in each of the events.

3 Using executive opinion, past data, other forecasting tools, etc, do estimation of the likely outcome for each action or event.

4 Evaluate the likely alternatives like choosing the alternative that has the lowest cost expectation by selection of a decision rule

By the application of the process, decisions can be examined within three diverse circumstances namely; certainty, uncertainty and risk conditions.

2.2 Forms and conditions of decision making

2.2.1 Decision Making Under Uncertainty

The assumption here is that the manager can just enumerate the likely occurrences, however, will not be able to assume their probabilities. May be, inexperience is a contributory factor which has made it very difficult to make some estimates in terms of probabilities. In a circumstance like that, the manager makes use of one of the four decision rules as stated below:

1. **Maximum**: The alternative which is the “best of the worst” should be chosen. The pessimist applies this rule. The pessimist does anticipate the “worst case” scenarios for any chosen alternative.
2. **Maximum**: The alternative that is the “best of the best” should be chosen. This rule goes for the optimist that has high expectations and can go to any length to succeed.
3. **Laplace**: The alternative with the best weighted payoff should be chosen. To determine this, equal value or importance should be allocated or be given to each event. Where there are no events, the relevance of each therefore is 1/n. This adds up to 1.0. The realist usually applies this rule.
4. **Minimal Regret**: The alternative that has the best “worst regret” should be chosen. This is done by calculating the table oregrets or the

opportunities that were lost. The alternatives were represented in the rows while events were represented in the columns.

2.2.2 Decision under certainty

2.2.3 Decision under risk

Decision making under Risk

Risk condition is a state of uncertainty that surround a business. Managers take decisions under this uncertain and risky conditions. Here the firms has made up their mind to take the risk (**risk absorption strategy**). The assumption here is that the manager lists the events and forecast their likely occurrences. Here the manager has little information than when he makes decisions within the state of certainty. He has more information than when he makes decision in the state of uncertainty.

For the in-between circumstance, widely used is the expected value decision rule. By weighting each of the payoffs together with the likely probability and also adding the weighted scores of the payoff, the expected value for the or an alternative is found. Then that alternative that has best expected value in terms of profits and lowest costs become the best to be chosen. This rule operates just the same way Laplace decision rule operates. The only difference is that the occurrences seem no longer taken or assumed to be same likely or also important. What the average payoff would be where the decision could be repeated from time to time is the expected value.

2.3. Decision Trees

This is defined as a diagrammatic tool of options that are within the use of a decision maker, presenting possible likely positive results.

Decision trees as the name implies is derived from the appearance of a tree-like model. Such is made up of a number of square nodes that represent such decision points which are left with branches, being read from left to right, which represent various choices. The branches of this model leave circular or chance nodes that in effect represent the occurrences.

The proximity of chance event, P(E), is illustrated on each branch. The proximity of the branches creating a chance node must give the sum of 1.0. Then the circumstantial outcome that is, the payoff for the alternative combination of each event is illustrated at the end of every combination. Payoffs are illustrated at the end before making the analysis in connection to the results of every alternative event that has been combined.

Questions

1. List and explain the conditions under which managers take decisions
   Explain the role of information on decision making in supply chain organizations

CHAPTER THREE

PRODUCTION AND PRODUCTIVITY

3.0 Introduction

Man engages in various productive activities and operations to create or provide him those life support amenities that make his life more meaningful. These are called “value and satisfaction” for himself. Those activities that result in creation of these things of value is called production. Therefore, production can be defined as – the creation of utility (value). These utility can be goods or services that satisfy human want.

Production can also mean the transformation or conversion of raw materials into finished goods that yield greater satisfaction to man, e.g. raw wheat to bread, raw wood to furniture, Leather to belt and other clothing etc.

In another note, production may mean rendering of services like transportation (movement of goods), storage (Warehousing), lecturing, barbing insurance banking etc. Each of these are activities and operations that yield satisfaction and value to make life better for man. Production includes operations like distribution of goods and services to the final consumers. To this, therefore, we say that production is not complete till the goods or services get to the hands of the final consumers by distribution.

In all, the principle that assigns inputs - labour, (L) Capital (K) to output (Q) is called the production function. Production function is the mathematical relationship between the quantity of output of goods and the quantity of inputs required to make it. Hence, a simple production function is made as follows

$Q = f(KL)$

Where

Q = is the output

f= is a relationship function of

K = Capital (input)

L = Labour (input)

The Concept of Resources (Inputs)

In operations management literature, inputs are those materials or resources that go into production or creation of utility. They are the raw materials and other additives that take part in making the product come to life as required. Hence, Inputs can be seen as resources that go into creation or production of this utility. Resources are called the five (5Ms) in manufacturing

Men – Human resources (Ideas, skill. Knowledge/competence)

Material – Material resources (raw material input)

Money – financial resources

Machines - Technical resources

Management – management resources (Coordination and control (input)

The concept goes with the Human resources base of operations management. This theory is called the Human resources base theory. It states that organizations are made up of people (Human resources) that have the proportional combination of skills and competences that can convert all the inputs to desirable outputs. Therefore organizations need to look inwards to maximize the potentials of their internal resource base before going outside the fence (external).

That the internal resources base can move the organization to actualize their vision where there is good management internal competences (Culture, policies, strategies and resource allocation). The theory opines that proper management of these internal

capabilities can make every organization in operations competitive. Hence there must be resource flexibility.

Resource flexibility: Resource flexibility deals with such a simplicity and flexibility that enables the employees and equipment to manage a large number of diverse products including output levels, duties and various duties and operations at a time without difficulty.

3.1 Productivity

Productivity is the output we get on the input and transformational efforts. It is the result we get after level of interaction. In an economy output is a measure of performance.

Productivity is determined by the value of the products which include goods (products) and services that are produced being divided by the values of the various inputs, which include; raw materials, cost of equipment, wages, power, etc) which were used for such outputs. Thus productivity is:

$$\text{Productivity} = \frac{\text{Outputs Produced}}{\text{Inputs used}}$$

For a service organization, outputs can be shown as the number of customers served, service produced and sales Dollars. Inputs are lobour used, materials, money, energy capital cost (for a multiple factor productivity measure). While for a single factor productivity measure, inputs are labour hours, Labour Dollars, in contemporary industries productivity is used as common indicators of a firm's success.

3.2 Productivity Calculation

To achieve productivity calculation, it is necessary to calculate the productivity of the understated activities or operations. Thus the understated activities are calculated as follows:

a. Employees numbering about three worked on 600 insurance policies within one week. These workers work 8 hours each day and were at work for 5 days within the week.

b. A group of employees made a product of 400 units and the worth of the products (before markups for associated expenses as well as profits) was based on the standard cost of $10 for each of them. The department of accounting revealed that the actual costs of the job stood at $400 being for labour, $1,000 being for materials and then $300 was for overhead.

SOLUTION

a. Labor productivity = $\frac{\text{Policies Processed}}{\text{Employee hours}}$

$$= \frac{60 \text{ policies}}{(3 \text{ employees})\,(40 \text{ hours/employee})} = 5 \text{ policies/hours}$$

b. Multifactor productivity = $\frac{\text{Quantity at standard cost}}{\text{Labor cost + Materials cost + Overhead cost}}$

$$= \frac{(400 \text{ units})\,(\$10/\text{unit})}{\$400 + \$1{,}000 + \$300} = \frac{\$4{,}000}{\$1{,}700} = 2.35$$

Decision Point

The above strategies had to be measured based on degree of performance in such periods and with expected visions. Where such is not meeting up to the standards, then there could be a review of strategies to achieve possible improvements.

3.3 Global Competition

To prosper in business, organizations must understand the fact that they must see customers, suppliers, facility locations and services from the global perspective. One must understand that he is wearing Gap polo shirt that is made in Honduras using a cloth that is produced in United States while relaxing inside a Cineplex theater in Canada, eating Nestlé's Crunch bar and enjoying Columbia films.

Industries everywhere are being faced with keen global competition. For instance manufacturers in the United States (U.S) have faced business reduction in the chemicals and domestics. Based on the current worth of world trade in the area of services standing at over $1.5 trillion yearly in airlines, banking, law, data processing, etc, operations in services have began to encounter series of international pressure just like in manufacturing sector.

As a result, trade organizations regionally like; the European Union (EU) and North American Free Trade Agreement (NAFTA) have strategized their competitive strategies in services and manufacturing areas. Irrespective of the place one is domiciled or is residing being under the challenge of international competition, the task facing one is to be able to put into the market such goods and services capable of withstanding competition and can stand in the market globally using effective tools and models that give strong backings to the products.

Self Test Questions

1. What is productivity for a hotel?
2. What factors do you think will influence an employee productivity in such organization?

CHAPTER FOUR

OPERATIONS STRATEGY

4.0 Introduction

Every organization has set goals and objectives to be pursued. These are seen as destinations to be attained. The road to get to this destination is the strategy. Firms adopt various strategies to remain competitive e.g. Differentiation, focus and Low price takers. The firms develop policies that guide these strategies and the people that carry them out. All the activities of the supply chain are directed by a given strategy e.g. operations strategy, manufacturing strategy, market entry strategy, survival strategy and lots more.

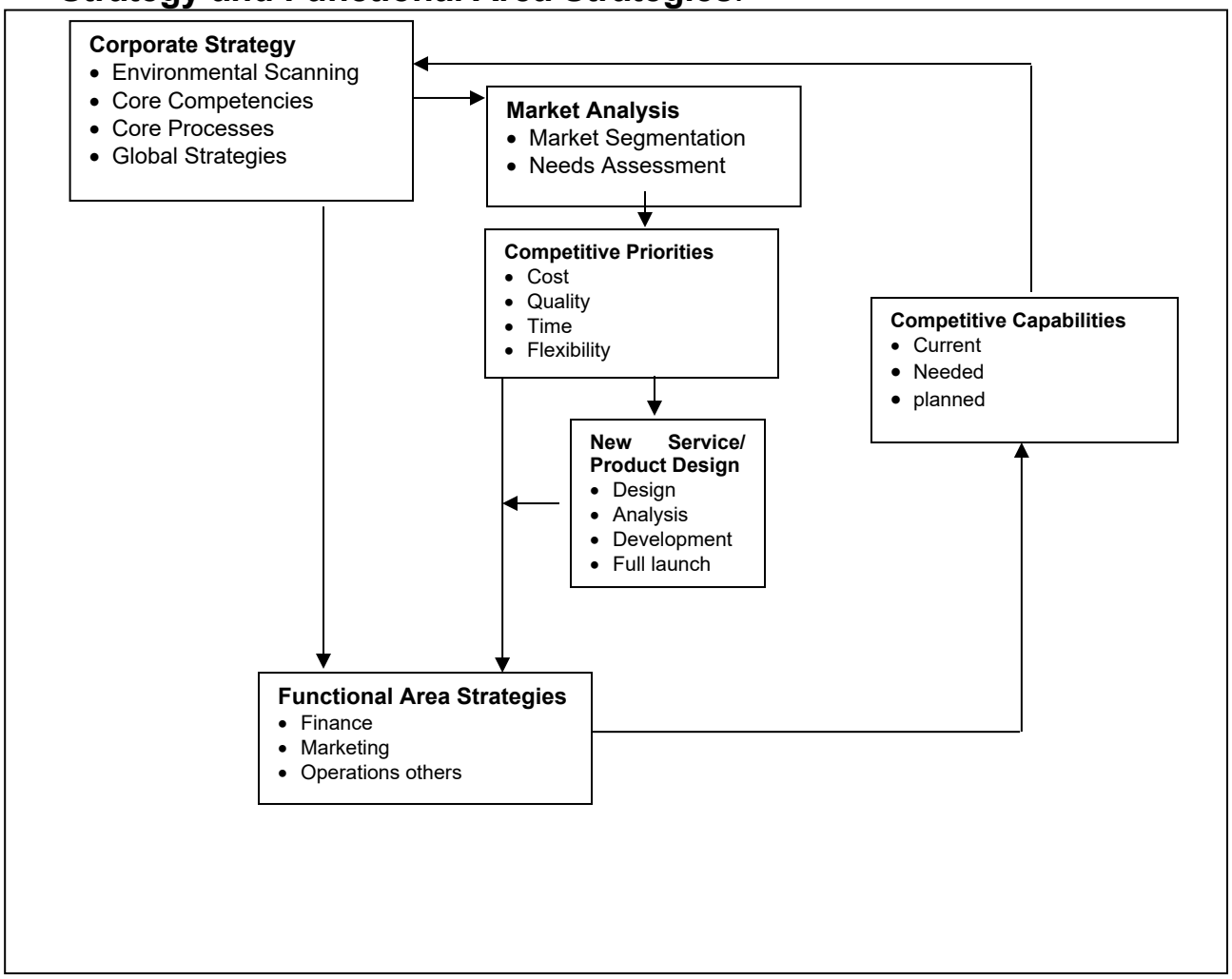
A Strategy is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations. Corporate strategy is a plan, a way to achieve these goals or get to the destinations. Strategy is the road map to the destination. This road map is the strategy at the organizational level (organizational strategy).

4.1 The Concept of Operations Strategy

Operations strategy concerns itself on how organizations deploy their resources to achieve set goals. It is how firms carry out their businesses in their areas of operation. How they operate, interact with their internal and external environment and how they produce and distribute resources in the market place.

In the canopy of Figure 4.1, the emphasis is on operations strategy. This identifies the ways which operations apply an organization's corporate plans or strategies. Ideally, operations plan connect long-term operations steps to achieve corporate objectives. By going through the works decisions that have to deal with operations encompasses issues like designs and operations of such organizations' procedures.

Figure 4.1 Competitive Priorities: Link Between Corporate Strategy and Functional Area Strategies.



Forms of Strategy/operations activities in a competitive environment

4.2 Corporate Strategy (Organization's Game Plan)

A corporate strategy is a plan which heads, leaders, managers and CEOs make for achieving organizational goals. Strategies provide focus for decision-making. It is the art and science of using organizational resources to render the goals defined by the organization. It requires marshalling out resources for definite mission, planning in anticipation of changing contingencies. Strategy could be seen as a long-term commitment of resources to achieve specific goals in a competitive environment (Aluko et al 2004).

It is a firm's concept of how best its objectives can best be achieved in the face of competition, changing resources and environment (ibid 2004) Strategies are the "How" of a company while objectives are the "**What**" of a company. Corporate strategies are the approaches through which long term objectives of a company are achieved. Strategy deals with choice of action.

They may include such issues as: expansion, diversification, mergers and acquisition, product development, market penetration, customer satisfaction, Quality assurance and control, vertical and horizontal integration etc.

This is particular on the nature and types of businesses such an organization pursues. It further marks new opportunities or chances as well as challenges in the areas or environments of its operations. It further locates its growth aims which it targets to achieve. Business strategy is also addressed and how an organisation can well distinguish itself in the competitive business environment. Furthermore, the organisation makes choices which can be in the area

of producing standardized versus customized services or products. It can compete on the basis of having cost advantage versus responsive delivery. Also corporate strategy gives direction that is capable of providing a platform for executing all the organization's corporate activities.

4.2.1 Ways to Develop a Corporate Strategy

Developing a corporate strategy is a management function (strategic function).



Fig 4.1 Strategic Management Developing Corporate strategy

Corporate strategy can be developed in various steps via:

To develop a corporate strategy, three basic considerations are involved which are:

1. **Checking and allying to environmental business changes**

Environmental Scanning- This involves the collection and assimilation of information about the industry and market. It is the consideration of events and trends that present either threat or opportunity to firm. These include competition e.g (Japanese Toyota competing with American Ford, Coca cola competing with Pepsi etc) Changing customer needs e.g. (shift from manual type writer to computer typing), Introduction of new products legal economic and political issues etc. A process whereby management takes a closer look and the environment where they operate to know their strengths and weaknesses and the things that would constitute a treat to their survival and the positive opportunities they will have in such a marketplace (SWOT analysis).

Internally the organization can scan itself to know its internal factors such as (human resources, technology, policies, financial capacity, equipment and facility, customer base) fitness to compete in the industry. This can be done through:

a. Computing ratios
b. Measuring performance.
c. Comparing past periods
d. industrial average
e. Surveys on employee's morale

2. Recognizing and bringing out the organizations main functions

This has to do with the firm's distinctive or core competence. The organization must have full understanding of their areas of core competence they will leverage on to compete in the market place. They can be low price takers after considering their technology and cost of production.

,

3. Bringing out the organizations main operations or procedures

4.2.2 Market Analysis

Understanding what the customer will always want and how to make such better than other competitors remain a vital and key factor for the success of developing a customer driven strategic operations.

Thus market analysis attempts to bisect the company's customers to various market segments or units. When this is done, identification of the needs of each of the segments becomes very obvious. This part therefore will discuss the various concepts associated with market segmentation and assessment of their needs.

a. Market Segmentation

Market segmentation deals with those steps needed in identifying those customers who may be in group, having a common demand that would propel the manufacturing or provision of such products or services that would meet up with the needs of such consumers or customers. For instance, a company that provides casual clothes has the teenagers and young adults as the target market in the philosophy of market segmentation.

Furthermore a dealer of children wears; the target market is children from ages 1 to Therefore to be able to determine effective market segmentation, the marketing analyst should be able to note those features that differentiate the various segments. Thus an effective marketing strategy can be applied with sound operating strategy as may be developed to make it workable. No sooner the market segment

has been identified by the organisation, the needs of the various customers can therefore be fused into the design of the products or the services towards the production processes. Once the firm has identified a market segment, it can incorporate the needs of customers into the design of the service or product and the processes for its production.

The under-listed features are the determinants that can be used to ascertain various customer segments in the market. They are:

1. Demographic factors: They are: income, educational level, age, income, location differentiate markets and occupation.
2. Psychological factors: Such factors are: fear, innovativeness, pleasure and boredom can be segment markets.
3. Industry factors: Customers can make use of specific technologies like: (robotics, electronics, or microware telecommunications); make use of certain materials (e.g. oil, wood or rubber); or can be involved in a particular industry (like health care, automotive or banking). The above stand as factors or the indices for proper market segmentation as the firm's or the organization's customers make use of the goods and services.

b. Competitive Priorities and Capabilities

A firm's long-term priority among others as contained in its corporate strategy is customer-driven. This is based on proper understanding of a customer. This needs a holistic effort of the various departments of the firm to be able to understand the level of the firm's operational strategies and what the needs of various customers of the firm are. Thus the firm must muster strong capacity and capability to meet up with the needs of external customers so as to beat or to withstand the

various competitors in the same industry. Furthermore a customer-driven operations strategy focuses to tackle the various needs being faced by the internal customers with the firm's process operations. The reason for this is because the overall performance of the firm is subject to its performance in its main and operational processes.

Competitive priorities deal with such important aspects which a process has to possess in order to satisfy those customers that are both within and outside in the present circumstance and in the future.

There are nine clear competitive dimensions which can be categorized into four groups. Such are:

Cost	1. Low operational cost
Quality	2. Top quality
	3. Consistent quality
Time	4. Delivery speed
	5. On-time delivery
	6. Development speed
Flexibility	7. Customization
	8. Variety
	9. Volume flexibility

Competitive priorities is a matter of planning, but may not be necessarily be obtained, in a process or among processes.

Questions

1. What is the purpose of environmental scanning in a new marketplace?
2. Explain the concept of business strategy to a nonprofessional
3. What is market segmentation in supply chain? What is the purpose of this exercise?

CHAPTER FIVE

NEW SERVICE OR PRODUCT DEVELOPMENT

5.0 Introduction

Today's consumers have avalanche of varieties of products and market offerings to choose from. The internet has made shopping a lot easier to today's consumers. They switch from product to product, brand to brand at a least complain or perceived dissatisfaction. This is true of people's (consumers) taste, life style and fashion. Expanding competition, emerging technologies and improved communication have altered most customers' tolerance for less than full satisfaction /value for money with products and services they receive. Market leaders therefore introduce new products and services of superior quality that would provide unsurpassed customer value.

Customers judge product or service quality by three basic elements viz:

a. Product features and quality (Design and content)
b. Service mix and quality
c. Price. (trade off)

To be a market leader, new products/services must be able to mesh these three elements into a competitively attractive offering.

Customers today switch to those products and brands that offer them the "full satisfaction" and value for their money. This switching behavior has forced service providers and manufacturers to develop competences to retain their market share through new product /service

development, diversification, simplification, standardization, brand enhancement and lots more.

For long-terms survival of firms or organizations, new products or services are very necessary and important. Business environment is dynamic orchestrated by diverse changes in time, people, technology and products or services life circle. In this circumstance therefore 'new' refers to or focuses on products and services that are of brand new and major innovative changes that have occurred or been carried out on the already existing products or services. This new product and service development strategies stands as a main activity in a firm and stands out to give services to both internal and external customers of the firm.

5.1 New product/Service development Process

A product is a tangible offering. However, it can be more than that. Broadly speaking, a product is anything a firm offers to the market to satisfy want or need. It includes physical goods, services, information, ideas, properties, events, persons and places. Every customer has core values for a product or service and go for it.

There are five levels of customer value hierarchy for a product or service which product developers and service providers must be aware of:

Level 1: Core benefit (i.e. the actual service or product the consumer is buying)
Level 2: The basic product e.g. a hotel room provides (Bed, towels, soap, water and closet)

Level 3: An expected product or service e.g. clean environment for the room

Level 4: The augmented product i.e. those additional that exceed expectation

Level 5: Potential product. Here is where researchers bring up new products

A company can add a new product or service to its brand through acquisition or development. The acquisition route can be in the forms of:

a. Company buyout- where a company buys another and acquires its products and add same to their collection using new news (new product)

b. It can acquire a patient from another company. Take for example. Nestle, the Canadian giant acquired US carnation, Hills Brothers, Dreyer Ice cream and Chef America. With these acquisitions, Nestle had an organic growth (the development of new products from within the firm) Nestle develops new products from their own laboratories globally.

c. It can buy a license or franchise from another and develop a new product.

5.1.0 New Product /Service Development Strategies

Also, many companies adopt the strategy of customer driven engineering to design new products/services. Here, they attach more prominence to customer preferences in the final design. New product

development requires management to define business domains, product categories and criteria.

Firms apply diverse strategies to ensure that they bring value to their customers despite lowering prices and maintaining quality for such product or service. Stated below are the diverse strategies being applied by firms that seem to have brought success. They are:

1. **Product Variety (An Assortment of Products)**:

The companies that have established their niches in part and through strong product variety e.g. Nigerian Breweries makers of star beer have product varieties like regular star beer, star citrus, star ginger, star raddler etc . These are varieties the firm uses to capture the beer market and enlarge sells. Others are: Amazon.com and Wal-Mart in retail, Dell in computers, Honda in motor-cycles and Campbell in soups. Product variety strategy deals with processes with flexibilities and capable of bringing as offerings a wide range of brand products without reducing cost, quality or speed of reach to the market.

Fig. 5.2 Nigerian Breweries Product Variety to Capture market share



Fig. 5.3 Coca Cola Plastic design and variety to drive market share



Product Packaging and design aestatics

Product Design: Examples of companies that have applied and used strong design strategies as weapons to survive in a keenly competitive business environment are; Saks Fifth Avenue in retailing, sticking in furniture, eBay in Web auctions and Kenwood in stereo equipment. The features that made these companies very unique and have distinguished them are; ease of use, ease of maintenance, aesthetic appeal and product or service characteristics. These are subject to the firm maintaining top quality standard on its products and services and beating the lead time for production so as to outsmart the other competitors.

Innovation: Firms competing with other in terms of innovative products and services must be innovatively oriented based on the application and development of new technologies. With the availability of new technology, the organisation remains on the advantage to compete favorably.

Service: The provision of value-added services is a strong strategy whereby manufacturers can apply to continually win customers orders. Such services include; repair contracts, consulting, delivery and financial services. In terms of helping customers to design their information structure, Dell has been reputed as doing.

5.1.1 Types of New product/Service (Innovations)

With growth in technology, new product and service introduction have been on the increase in recent years. In the grocery and electronic industries, many high-tech firms strive for radical innovations. High-tech firms cover a wide range of industries in – electronics, communications, telecommunications, computers, soft wares, biotech etc.

New products and services are those entirely new-to-the-world offering which the company introduces to its target market. The new product or service has not existed before “A new kids in town” Their taste, quality, and other inherent characteristics are yet to be known by the consumers. They firm brings it to the market place through advertising and other means of communication to the market.

Also are an improvements or and revisions of existing products or services. At time firms use new products and services to improve existing offerings in the market place. Take for example sonny electronics uses new product activities to modify and improve existing products (Home theater/ Electronics)

Most new products in today’s markets are brand extensions of existing products and services.

Companies that fail to develop new products, services or innovations put themselves at risks, their products are vulnerable to changing customer needs and taste, new technology, shortened product life, increased domestic and foreign competition.

5.2 Challenges to New innovation in Product and Service development

Firms in supply chain are sharp in embracing and undertaking innovative steps in capturing markets. Yet, there are challenges to new product and service development against these high tech organizations. Among such bottle necks are:

a. High technological uncertainty
b. High market uncertainty
c. High and competitive volatility
d. High investment cost
e. Short product life cycle
f. Difficulty in funding risky projects

5.2.1 Why Newly Developed Products and Services Fail

New product/service development may be very risky. Most fail at an alarming rate of 50%.

Many reasons account for this failure and they include:

a) Poor understanding of the market and trends
b) Poor market research and studies
c) Over estimation of market size and strength
d) High product/service development cost
e) Poor Design and positioning
f) Improper and ineffective advert

g) Over pricing and poor understanding of customers needs

h) Ineffective distribution strategy (products)

i) Lack of organizational support

Readers should note that failure of a newly developed product or service is not the end of the road. Most contemporary high-tech firms have leveraged on their failed products and become industry leaders e.g. Dogster.com and pets.com.

5.3 Service and Product Definition

For any developed economy, new products and service are very vital. This is based on the fact that majority of the gross domestic product of developed economies are more concentrated in the service sector. E.g. USA service sectors like entertainment (Music, Films, Sports, Fashion,) Education and research, Research and development (R and D), Transportation and communication, Distribution and hospitality are service sectors that drive USA and Nigeria economy.

Presently, the needs of the customers are changing with changing technology. Consequently, technological advancement, changing customer requirements and globalization have brought a tremendous increase on the need for organizations to be ready to compete towards increasing the horizons for bringing out to the market new products and services that will meet the needs of the contemporary (Digital age) customer.

The provision of new products and services by a firm has lots of advantages which are stated hereunder:

a Increasing the profit level of the existing products and services.

b Influx of new customers (the X and Y generations) to the organisation

c Increasing the continued patronage of the existing customers

d Creating several opportunities for new markets.

The existence of new products and services creates room for continued corporate growth of the firm in the ever changing business environment which every firm faces daily in the arena of business activities.

5.4 Service Package

Service Package can be defined as such collection or gathering of various goods and services that are made available through service processes for the purpose or benefits of both the internal and external customers of the firm.

Defining what a service process is, one of the major challenges in managing such. The aspect of the challenge is in trying to particularize or identify what the process provides to the external or internal customers. Remember your lodging experience at a hotel last. What is the room, lobby area and the hotel building appear to be like? Was the meal as ordered by you sizeable and sweet? Was there a concierge, restaurant and swimming pool? Was parking at the hotel easy and the bellhop informative and friendly? The experience you had at the hotel was a gathering of various goods and services which the hotel offers based on the hotel's various processes of operations. This is called a service package collection and is made up of the under-listed features:

1. **Supporting Facility**: This refers to those physical resources including manpower, etc. which must be on ground before service offerings can be commenced to the customers.

2. **Facilitating Goods:** Facilitating goods are those materials which were purchased and consumed by a customer. They can further be defined as those items which a customer provides in order to be served. A good example of a facilitating good is the food a customer ordered from a service room.

3. **Explicit Services**: Explicit services are such benefits which can be easily noticeable based on senses. They comprise of important elements of such service also known as explicit services. From the service room, the explicit services which a customer receives included; the preparation of the food by the chef and the consequent delivery of the food or meal by the bellhop from the service room to the customer's room. Further- more, other examples of explicit services at the hotel include; experiencing a prepared meal, taking a swim in the swimming pool, getting advice on tours from the errand person and the table service at the restaurant.

4. **Implicit Services -** These are intangible benefits a customer may sense slightly. A friendly errand person or servant may or can create an aura of friendliness or comfort and consequently create a sense of surprise and goodness. Further implicit services include an entertainment while on a waiting line, thereby reducing or making the seemly delayed time to look shorter though; being at a well-lighted parking area that gives sense of safety. It is also illustrated in an appointment system where there is fairness and control.

5.5 Quality Function Deployment*:* This is a strategy whereby customer requirements are translated into such suitable technical needs. This is

to meet up with at every stage geared towards developing the product and subsequent production.

Customer's needs and wants stand as the major towards the definition of products and services. The input is used towards the definition of new products and services or to bring purification into those ones already in existence. Thus a strategy being used by manufacturing companies including some other service companies towards existing products already manufactured is known as Quality Function Deployment (QFD).

This is a process that deals with translating the customers' needs or requirements to the suitable technical needs in respect of the various stages of product or service formation and consequent production. Companies like Bridgestone Tire and Mitsubishi Heavy Industries were the originators of QFD during the late 1960s and in the early 1970s.

During that period, the companies used such tools like charts which considered customer requirements in the process of product design. Again in 1978 the first work on QFD was published by Yoji Akao and Shigeru Mizuno. The work then showed how the model was used or applied by over 200 U.S companies. Some of these companies are; Texas Instruments, Chrysler, Procter and Gamble, Digital Equipment, AT&T, ITT, Ford, Polaroid, Hewlert-Packard, etc.

The strategy sought solutions surrounding the following six questions:

1 **Voice of the customer**: Conscious to know the customers need and want?

2 **Competitive Analysis**: For our customers, how are we really doing in comparison with the competitors?

3 **Voice of the Engineer**: What are the technical measures that needed to be taken to care of the customers' needs?

4 **Correlations**: What relationship exists between the voice of the customer and the voice of the engineer?

5 **Technical Comparison**: What is the performance comparison between our products or services and that of our competitors?

6 **Trade-offs**: Needed to know the likely technical tradeoffs?

5.6 Why Firms Develop new products/Service

a. It is a growth strategy firms use to drive profit and return on investment for share-holders.

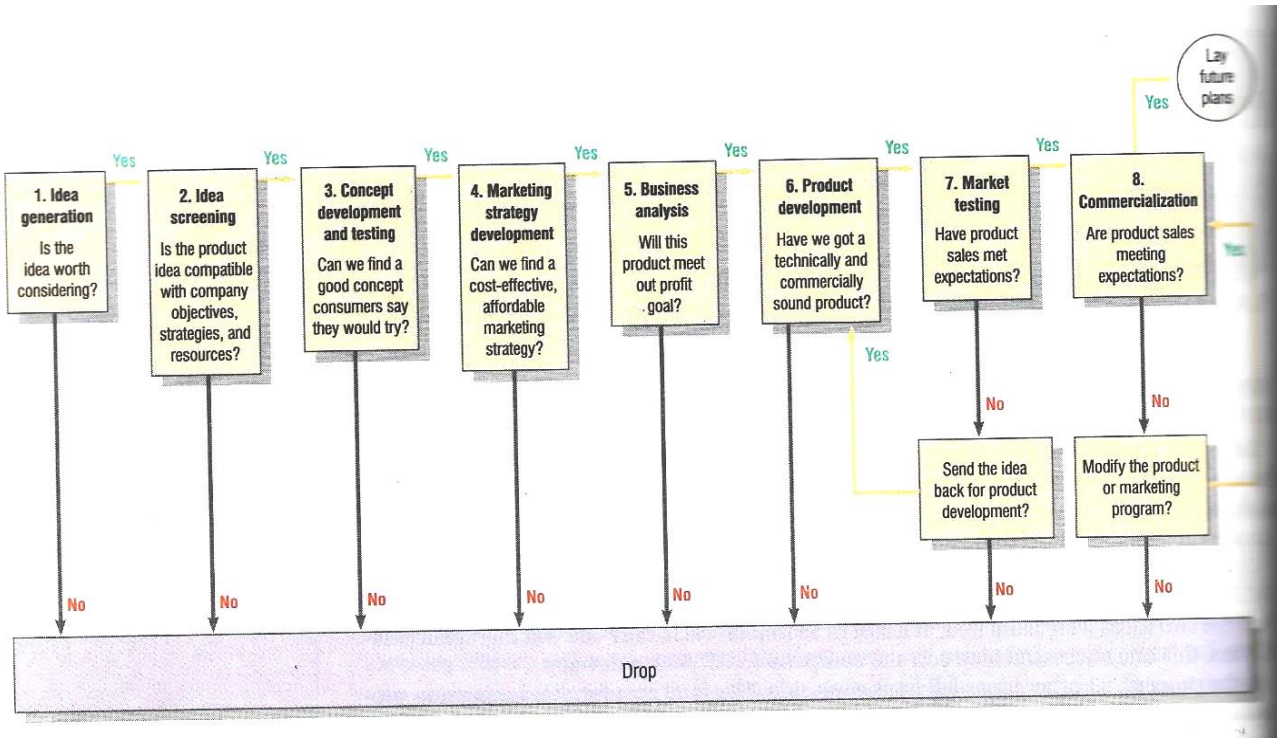
b New product/service development helps to shape a firms future

c Helps to build sales and market share.

d Helps to with stand competition and remain sustainable.

e To cope with the changing need of the customers at all times.

New Product/Service Development Process



(Adapted from Potter and Keller 2013)

This is a process that starts by considering the development strategies or processes for a new product and then ends with the launching of the product. Stated below are the illustrations:

Design: Design is the first stage which is very critical in that it serves as a link to the creation of those new products or services which must be in line with the corporate plans of the organisation. As earlier discussed, the specification of the long term objectives of an organisation lies on the corporate strategy and the very market, which is the area of specification the organization wishes to operate or compete with the other competitors.

Based on that arrangement, the development strategy clarifies the extent or the very market such products will be marketed or be offered. Bearing in mind the development strategy that have been adopted, various plans or ideas emerged and such must be screened. The essence of undergoing the necessary screening is to ensure that such ideas are workable and to guaranty market worthiness. In terms of service, the ideas state the way customers must cooperate with those that provide the service, the importance of the service, the maximum benefits such services render to the customer, the worth of the service and the mode of delivery of the service.

As these are determined, then the particular package of the service is put together to get the best idea, competitive priorities become allocated to the strategies. When this is accomplished the proposal for the deliverance procedure for the service package is made and ascertained for proper feasibility. More will be said about how the

service is delivered when the topic of service process design will be discussed.

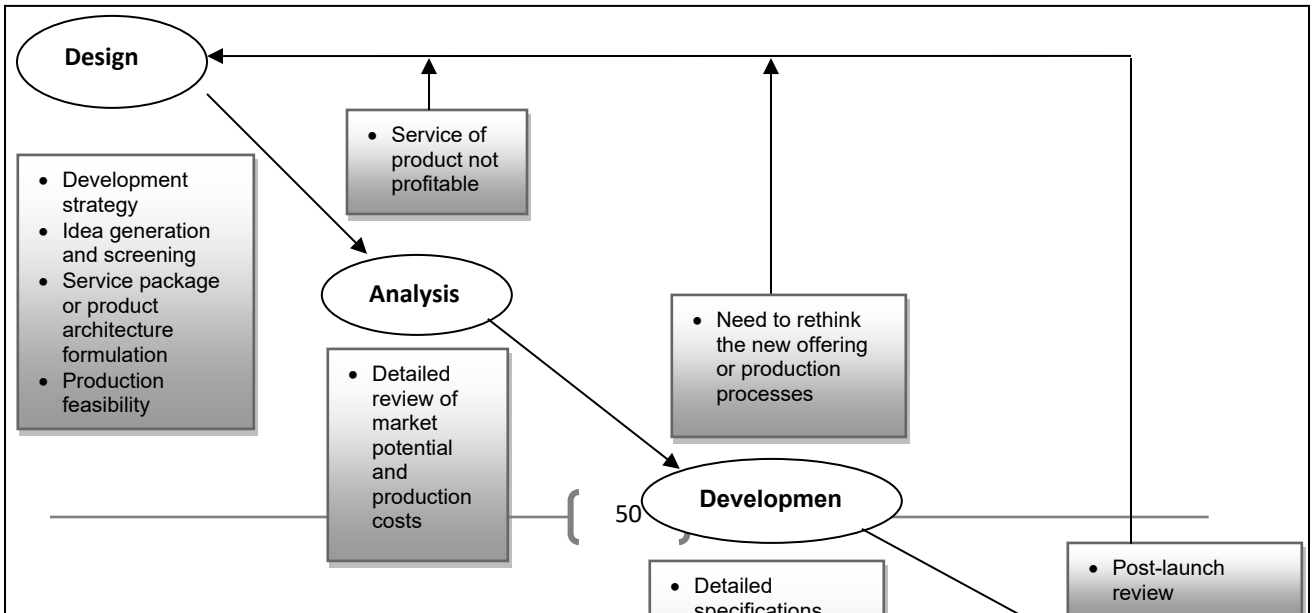
Analysis: In the second stage which is the analysis, it deals with the thorough review or study of the new products and how such will be made available. The essence is to ensure that such is in line with corporate strategy of the organisation, agrees with the necessary regulatory policies, have a minimal market risk and then meets with the various needs of the prospective customers. The necessary resources required for the new product needed to be checked based on the stand-point of the main capabilities or competencies of the organisation coupled with the need to have more resources towards having good strategic partnership with other organizations. Where the market study shows that products is likely going to be acceptable in the market and the organisation has what it takes to produce it, then the organisation can take a step further towards the production process.

Development: At development, which is the third stage, the organization becomes very specific about the product to be offered. The required inputs and competitive priorities needed to make the product available have been put together. The process such will go has been diagrammed and every activity is arranged in such a way as to meet the necessary competitive priorities which must add value to the product or the services. As the new product is determined and the processes of production set up, then the marketing strategy can be drawn.

The last phase is the training of the personnel and a test production run is made to ensure that there are no issues in the production line of the new product being produced. When this is accomplished and if there are some challenges which are quite unforeseen, there could be a review of the product or service production strategies that are necessary for the production so as to have a hitch free process.

For instance an airline offering a new package may include such as a new route from South Bend, Indiana to Columbus, Ohio at 5P.M week days. Such services can be delivered using a Boeing 737 airplane. This is because of the space and the necessary comfort that is associated with such a plane services which are better when compared with similar services being offered by smaller commercial aircrafts. Assuming in the process of development, it was noted that 737 airline's fleet has since been put to capacity use and any attempt to shift its schedules would create conflict between the flight attendants and pilots meaning the flight has been altered.

However, a new flight could be arranged where such an airline being contracted operates on a regional basis that uses smaller commercial aircraft, though this might affect passenger comfort and the cost of service delivery. Moreover the processes required for a change service delivery package would need further thoughts analysis.



Self Test Question

1. What role would you expect to management to play in developing new product or service in the organization?
2. New products fail to see the light of the market. Why is this so in most cases with new products? Give four ways a firm can get out of this mess.
3. What is a product? List and explain the processes use in developing a new product

CHAPTER SIX

PROCESS DESIGN STRATEGY AND ASSOCIATED CONCEPTS

Chapter Objective

After completing this element the student should be able to

1. Say the relevance of design
2. Explain the various types of design
3. Explain associate concepts in process design

6.0 Definition of Process Design

Process design: Process design deals with systematic and careful construct and assembling of various inputs of a process like resources, work flows by applying such methods that could create a turnaround of the inputs into outputs otherwise known as the products. In process design strategy, organization's resources are transformed into a process which is put in use towards creating something of value and profitable. The availabilities of products and services are purely based on processes since no such can be in existence or achievable without a process. Again the existence of every process is for development of a service of a product. The determination of the processes that needed to be carried out internally and those to be carried out externally including the purchasing of materials and services are the commencement decisions bordering on the input selection. Furthermore the decision of process designs equally have to do with right allocation of human skills as well as equipment and such parts of the processes that needed to be carried out by each. In process decisions, it must be consistent and be inclusive of competitive priorities as well as such organization's capability towards getting such resources that are necessary to support their operations.

Decisions about process design come to play in circumstances when:

a There exists such a gap between competitive priorities and competitive abilities.

b An innovative product or service is offered.

c A gap exists between competitive priorities and competitive capabilities.

d A new or substantially modified service or product is being offered.

e Standardization based on the quality as must be benchmark.

f There is changing trend in demand for service or the products

g There is inadequacy of current performance.

h The costs of inputs are not constant.

i Competitors are making gains based on application of new strategies

j Cutting-edge technologies have been introduced.

6.1 Major Process Design Decisions

a Process structure: This is based on the way the processes are designed based on the resources that are necessary to be applied. It further includes how such resources are allocated in between them and the key features of such resources. The basis for the strategic decisions for the services are based on the desired amount, customer contact as well as the competitive priorities which such a process design is programmed or designed to accomplish. The volume level and the degree of customization as well as the competitive priorities constitute the beginning points for manufacturing. The manager will be able to detect possible misalignments in process which will therefore enable him to reengineer and perfect on process improvements based on the proper understanding of the various connections.

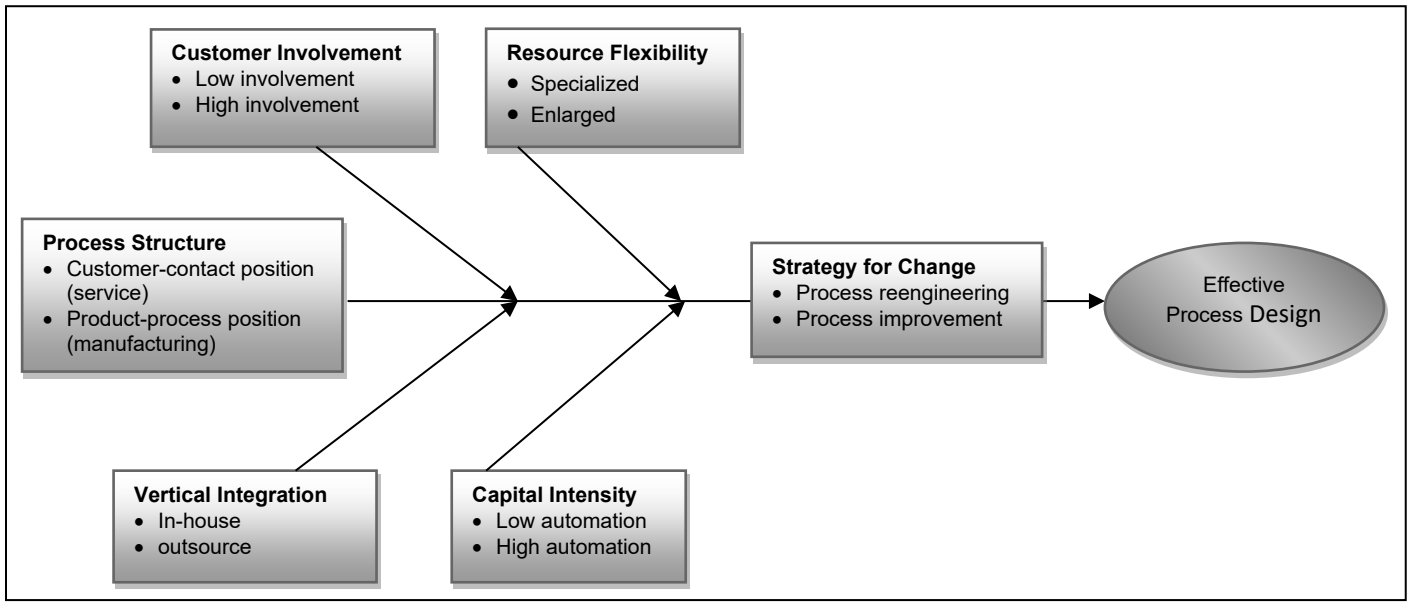
b **Customer involvement**: Customer involvement is a reflection in the ways whereby customers become part of the process in the system and the degree of their involvements.

c **Vertical Integration:** In vertical integration, it deals with the extent at which a firm's production system or service can handle the entire value chain. That is to say that more such processes are being executed internally instead of using suppliers and customers, then the more the degree of vertical integration.

d **Capital intensity:** It is the combination of human skills and equipment within an operation or a process. The more the cost of equipment in use, the more the overall capital intensity (being employed) in the organization.

Major process design decisions are more clearly known during the process or at the sub-process levels instead of at the level of firm. Such decision stand as strong building blocks which can used o applied in diverse areas. This is to be able to achieve process designs that are very effective.

Major Decisions for Effective Process Design



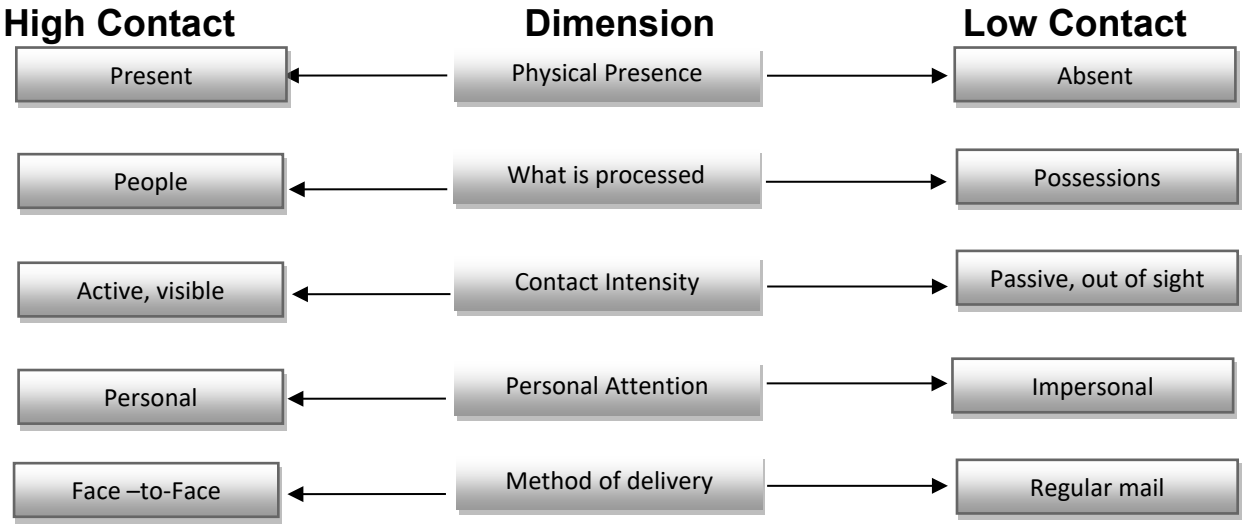
6.2 Process Structure in Services

In designing a well-functioning process, a major decision a manager is faced with is to choose such a process type that can best bring about relative relevance. This is based on quality, time, flexibility as well as costs. However, in terms of designing processes, the strategies can be very quite different. This is subject to whether such a service is to be provided or if the product is to be manufactured. However given the level of share of the workforce in industrialized countries, such begins with service processes.

Nature of service processes: Customer contact service process design is dynamic and subject to firms. Consequently, a service design that looks or is effective in one circumstance can end up being an ineffective and a poor choice in another firm or area. For instance, in a fast-food restaurant, a process design can succeed in getting customers in and out of the firm. But such same process cannot or may not be applicable or be a good strategy in a five star restaurant. This is because in five star restaurants, customers' interests centre on seeking pleasure such like having experience in leisure dining, etc.

Again, the servers in a restaurant can make use of a good design strategy but a process back in restaurant's business office would not be necessary. The type and nature of customer contact is a determinant factor for any good process design. By customer contact, it means the degree at which a customer fully involved which also includes his being given personal attention in the course of service process. On the other hand, as per in aspect of manufacturing process, the process itself may accommodate the customer as a part of it.

Nested-process concept: This process is applicable in customer contact. This is because in the course of operations, a process part may have contact that is low while other process parts can have a high contact. Again, a sub-process can be high at some circumstances or low on other times. For instance, there are situations where a customer may not be physically present but however still maintains high contact. This can be achieved by the customer's active involvement in the process. Such involvements can be achieved via such mediums like eBay and other social media or internet interactions which do not require face to face interactions.



The first approach deals on whether the customer is physically present or not during the process. Under this condition, having contact with the customer is very vital irrespective of the fact on whether the customer is from outside or within and whether the service process is within manufacturing or service firm. In this regard, the level of contact can be estimated to be the percentage of the time such a customer is involved in the process in line with the time needed to complete the service.

The first dimension is whether or not the customer is physically present at the process. Customer contact at a process is important, regardless of whether the customer is internal or external, and regardless of whether the service process is at a manufacturing or service organization. The amount of contact can be approximated as the percentage of the total time the customer is at the process, relative to the total time to complete the service. Therefore the more of the percentage which the customer is involved, the more the contact of the customer.

Then, that which is being processed at the service encounter becomes the second dimension. Here customers are included in such tangible actions by those carrying out process servicing. The person is provided with the service instead of making the service be for the person. In this circumstance, it implies that the customer must be physically present. It simply means that customers are made to become part of the process, and it thereby makes the entire service process to be in line with its consumption. There are many possession-processing services that are in existence. Such are found in; freight transportation, e-commerce, equipment installation, maintenance, repairs and warehousing. They include actions that are tangible in nature like physical objects which at the end makes the customer to enjoy the value.

Active Contact: This is the scenario where a customer is actively involved in the product creation or services. This also has some effects in the process of service itself.

Passive Contact: Here, the customer is excluded in the tailoring process aimed at meeting special needs as well as how the entire process in being done or performed.

6.3 Process Complexity, Divergence and Flow. In vertical dimension with reference to the customer based on contact matrix centers on three aspects of the process which are:

a Complexity
b Divergence and
c Flow

The analyses of each of the above can be done based on three dimensions:

Process Complexity: This deals with the number and the complex steps necessary in any process for proper execution and execution. Complexity somehow is subject to how wide and clear such is process in made known or defined. For instance, the auto finance process in a bank transaction is complex procedure because it has to do with several steps. Credit application is one of the sub-processes that are found within auto finance. However such is not as complex because it deals with just one aspect of a process in auto finance with just fewer steps.

Process Divergence:

Process divergence deals with such extent where there is a highly customized process based on considerable latitude based on the degree of its performance. Every performance will be virtually unique in the event of the process changes with each other. For instance in consulting, law and architecture are good examples of highly divergence service processes where many steps in them can change with each customer.

Competing the home design for an architect interval processes is likely to have a different character for each customer irrespective of the fact that there could be different character for each customer despite the fact that there could be common activities. Here much judgment and discretion are involved subject to the type of situation based on the way a customer wants.

Process Flow: Process flow is the systematic flow or work progress based on the sequence of steps as contained in a process. This can start from a highly diverse to linear operations.

A Line Flow: A line flow is a situation where information, materials and customers flow or move linearly ranging from one operation to the next operation. This is subject to a determined or fixed flow. However in the event of a considerable changes or diversities, this will make the work flow to look muddled up. The effect of this will lead to one customer's path intersecting the path meant for the next customer.

Front Office: In front office process there is a high customer contact. Here the service provider is involved in direct interactions with both the internal or external customer. Due to the customization of the service as well as the variety of service options, it resulted to a more complex process thereby making many steps in it to have divergences that are considerable. Furthermore workflow is muddled up and varies from one customer to the other. This creates room for more freedom in the steps and occurrence of the processes.

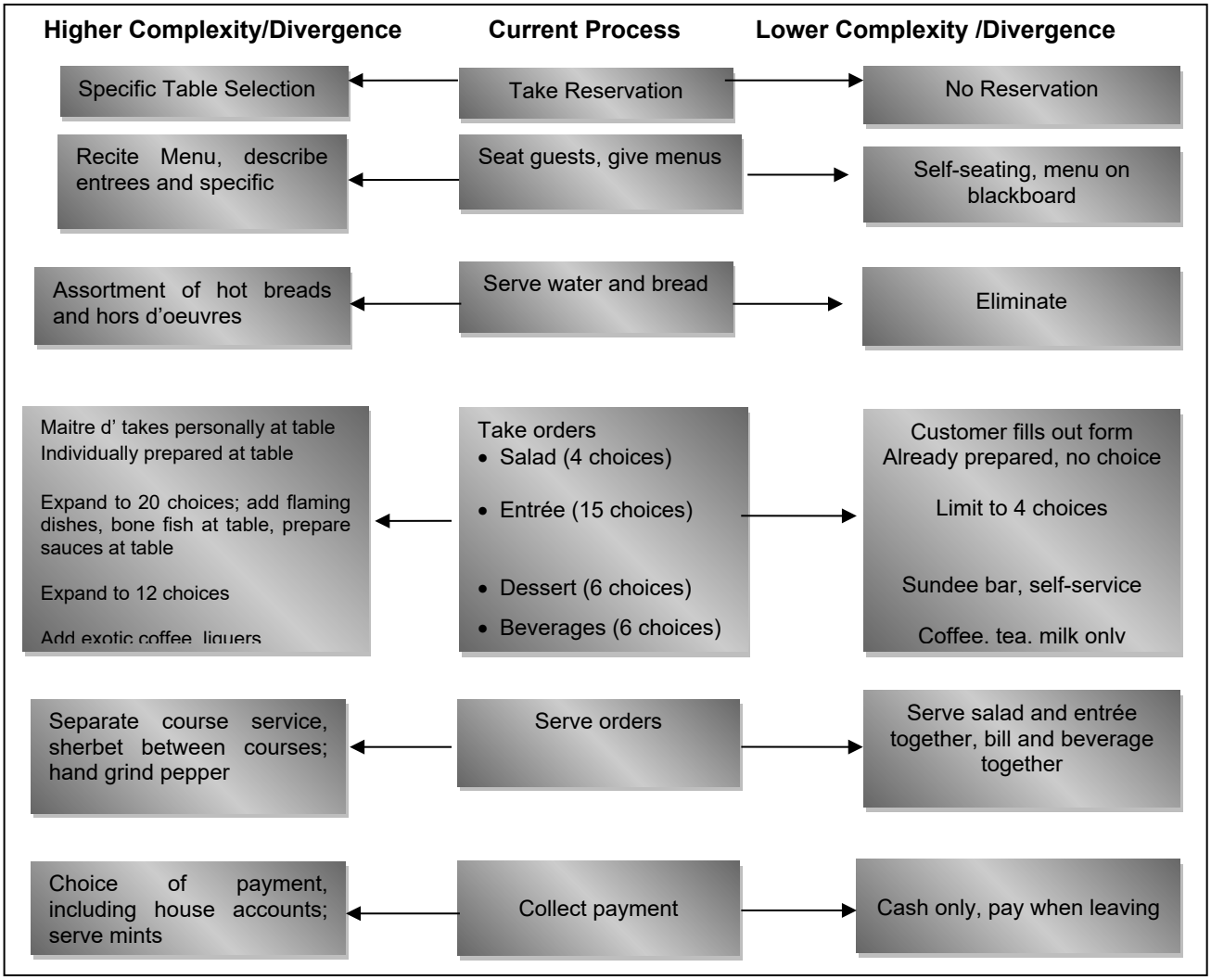
Hybrid Office: A hybrid office inclines to position itself in the middle based on the five dimensions and high in some contract measures. It

remains low at others. It has moderate levels of customer contact as well as standard services. It creates options thereby giving the customer an opportunity to choose. The flow of work moves in a progression of one workstation and then to the next while maintaining some dominant apparent paths.

Back Office: This is a process that has both low customer contacts and little customization in terms of services**.** There is the standardization of work with its routine comprising line flows.This emanates from one service provider to the other subject to the service completion. This can be seen for example, in a client monthly production fund balance reports.

It is a standard process that is often repeated and only needed a little variation. When such is completed, it is checked to achieve reasonableness and reports sent to be analyzed by the analysts. As process complexity and divergence are, so is customer contact being quite low with a process that has a line flow.

6.4 PROCESS STRUCTURE IN MANUFACTURING



Nature of Manufacturing Processes

Manufacturing process deals with conversion of materials into finished goods as tangible products. This process therefore changes the material inputs to outputs at various levels such as:

1. The materials physical properties is changed
2. The material's shape is changed.
3. Machine parts are fixed to the needed dimension,
4. A surface finish is obtained.
5. Parts and materials are assembled or joined.

For each category, more specific processes exist within. For instance the materials physical properties changes can be in form of cold working, heat treatment, refining/extraction and a chemical reaction.

6.5 Concepts Associated With Manufacturing Operations

a Customization
b Diversification
c Differentiation
d Simplification
e Standardization

6.5.1 Mass Customization

This is when a company's product plan focuses on certain key priorities which will convince the customers to place orders and an important aspect of such competitive priorities is in the area of variety. When making a choice of a particular product or service, customers want a variety of choices to choose from. For instance, assuming one wants a new color for his living room. This will lead to complimenting all existing furnishings such as wall decorations and the carpet towards blending with the new color. Furthermore, the local paint dealer will be visited for selection of color from the variety of colors being offered to the market that would be suitable.

When such a visit to the local paint dealer is done, the customer can be supplied with all the paints needed as the customer waits. This can be economically done by mixing the base colors and pigments that are separately stocked. The result of this is being able to supply unlimited

variety of colors by not keeping the inventory stocks that are needed to meet up with each customers' particular colours needs or requirements. This is mass customization in practice being practiced by the paint dealer. This became achievable based on the flexibility of the firm's processes towards having a numerous variety of products or services being achieved with minimized costs.

6.5.2 Diversification

Is a process of branching out into production of other related products or line of products away from the original brand. It is the manufacture of new products in addition to the ones previously produced. This can be done through various modes e.g.

a. Expansion into related products which can be sold through the old channels. Here, there are few marketing problems.
b. Acquisition of other related or nonrelated products and lines with already established customers. Major problem here is the integration of old and new systems and concepts
c. Expansion into unrelated products on self-initiative. This poses a challenge to most entrepreneurs as sourcing of funds and technical competence is a big challenge.

6.5.3 Specialization

In this process, the firm centres on one product and specializes on it. They are known for this product and are key specialists on it. It is a specialty and leads to better use of machinery, skills and competence of workforce. Here, there is a strong ability to build a reputation in the market as a brand. But there is lose of flexibility and failure to respond to market demand and changing needs of the customer in these days

where technological changes driver quick response and just in time delivery.

6.5.4 Simplification and Standardization

Simplification reduces (cuts down) the task to the barest level of activities. It eliminates all unnecessary activities and focuses Standardization is the setting up of standards in performance and other activities. Things are done within scope e.g., expenditure, travel and other related processes must follow laid down rules (compliance) .

6.6 Self Test Question

1. Explain the term Diversification in manufacturing operations. Why do Supply Chain organizations diversify?
2. Write explanatory notes on (a) Customization (b) simplification (c) standardization and (d) Good manufacturing practice (GMP)
3. List and explain five (5) characteristics of a service.

REFERENCES

Altekar R. V. (2013); Supply Chain Management Concepts and Cases; Asoke K. Ghost, PHI

Altekar R.V. (2013): Supply Chain Management: Concepts and Cases PHI Learning Private Limited, Delhi-110092.

Altekar, Rahul (2004); Enterprise-wide Resource Planning: Theory and Practice, Prentice- Hall, India.

Arend M. (2002) Manufacturing is on the move" site selection www.siteselect.com

Benton W.C. (2007) Purchasing and supply Chain management – Mac grow

Kotler P and Keller KL (2009) Marketing Management 13th edition PHI, India

Kean-Choon Tan (2009) Principles of Supply Chain Management – Cengag Learning – United kingdom

Learning Private Limited, Rirujhim House, iii, Patparganj Industrial Estate, Delhi.

Beckmann M.J. (1999) Lectures on location theory, Berlin New york

Bhatt, M. S. (1999); Paradigm Shift in Material Management Philosophy in the Millennium transition Period.

Hack G.D. (1990) Site selection for growing companies- quaruum books Westport.

Jessen. K and G. Pompeli (2002) "Manufacturing firm location preferences Of small agro-business firm – journal of management july 2002.

Weihrich H. et al (2008); Management: A global and Entrepreneurial Perspective Company Ltd, New Delhi.

Porter M.E. (1984) Competitive advantage New York, the free press

Dougherty J.R.(2007); Getting Started With Sales and Operations

Planning.

Venessa Cross (2011); Methods to Determine An Aggregate Planning Small Business. Chron

Rosemary Peavler (2018); Just-in-time (JIT): Inventory Management Business Financial Management.

www. Reference for business: Aggregate Planning.

www.norfine.com/revenue: What is Yield Management.

www.lucidchart.com: What is Value Stream Mapping
www.logolity.com: Applying Lean Principles to Supply Chain Planning
www.fourprinciples.com: Lean Production Facility Layout.
Phil Coy (2019); Production Scheduling 7 Principles.

The Value Equation: Value Chain Management, Collaboration and the Internent-Andrew White, Logility; Inc.

Anderson R.E. (1973); Consumer Dissatisfaction: The Effects of Dissatisfaction Expectancy on Perceived Product Performance. Journal of Marketing Research.

Olson J and Dover .P. (1979); Disconfirmation of Consumer Expectations Through Product Trail. Journal of Applied Psychology.

Festinger .L. (1957); Theory of Lognitive Dissonance; Stanford C.A. Stanford University Press.

Horland et al(1957); Assimilation and Contrast Effects in Reaction to Communication and Attitude Change. Journal or Abnormal and Social Psychology.

Carlsmith .J. and Aronson .E. (1963); Some Hedonic Consequences of the Confirmation and Disconfirmation of Expectations; Journal of Abnormal and Social Psychology.

Lucjan Kierczak (2019); Five Reasons why Customer Satisfaction is Important.

Survicate.com/customer.