Services Operations Management

Block

3

DESIGNING SERVICE OPERATIONS

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Our E-mail id: cwfeedback@icfaiuniversity.in

Centre for Distance and Online Education (CDOE)
The ICFAI Foundation for Higher Education
(Deemed-to-be-University Under Section 3 of UGC Act, 1956)
Donthanapally, Shankarapalli Road, Hyderabad- 501203

BLOCK 3: DESIGNING SERVICE OPERATIONS

Service Operations Management has become an area of intense focus globally across business organizations. This is because the role of services in deciding the health of national economies is fast increasing. This dominant role of services is calling for strategizing service operations to ensure their efficiency across the entire supply chain. Strategies need to enable design of service operations suiting the business needs of organizations. This block address various aspects related to service operations Management.

Block 3 of Services Operations Management provides an exhaustive coverage of Designing Service Operations, spread over five units. Once the student understands the basic issues in services operations and strategize which model is to be adopted, the next step is designing the model. This block deals with various issues related to designing the services operations.

Unit 7, is *Design and Development: Service* design requires involvement of all the stakeholders. While introducing new services and products, many developmental initiatives are required. This unit defines the service product, discusses issues involved in locating service facilities, layout of facilities identified and product development process.

Unit 8, *Innovation & Service Development*: Innovation in services is important because the business requirement of various sectors are growing multi-dimensionally. These businesses are looking at more than one option for optimising the top line and bottom line of the business. Hence, innovative services are well accepted in the market. These services play central role in innovation processes throughout the economy. This unit covers basics of innovation and creativity, culture of innovation, linking improvement to customer needs, drivers of innovation and commercial convergence

Unit 9, *Service Process Design*: Meeting the needs of the customer is business requirement of any industry, more so, in services industry. Hence, process design is very important aspect. This unit explains process flow diagrams, process education and communication, customer orientation in process design, service blue-printing and use of simulation to improve process design.

Unit 10, *Designing the Service Delivery System*: The delivery system in services is dependent on client requirement. This unit discusses the concept of customer value, application of quantitative techniques, queuing theory applications, strategies for handling waiting lines, Monte-Carlo simulation and process improvement techniques for service industry.

Unit 11, *Front-Office-Back Office Interface*. The work performed in service firms that do not require the presence of the customer is normally called as back-office work, and work that does require the customer presence is known as front-office work. In many industries, work that does not require customer contact has been “decoupled” from front-office jobs. In this unit, we will discuss the topic of front office-back office interface covering the definition of decoupling, service decoupling, decoupling and cost, decoupling and quality, decoupling and delivery speed, decoupling and flexibility, decoupling and strategy, cost implications in decoupling and service implications in decoupling.

Unit 7

Design and Development

Structure

"Design is not just what it looks like and feels like. Design is how it works."

- Steve Jobs

7.1 Introduction

A service process design leading to a product ultimately, can it be an App, a desktop product, shall ensure that, it is reliable, accurate, easy to use and more so is completely customer oriented.

In the previous unit, we explored different strategies for global service operations. They include generic international strategies, transnational operations strategy, managing multi-country operations, off-shoring and on-site operations, global strategy, and strategy in healthcare and expansion strategies. In this unit, we will discuss design and development of processes involved in service operations.

Post globalization, the share of services and its impact on the national economies across the world has been increasing phenomenally. Service has become a saleable commodity and organization started marketing service as a product, in spite of its intangibility and other differences with a physical product.

Service product design describes and prescribes the procedures to be followed in service delivery and guides how to interact with other resources such as manpower, materials, and equipment. For example, call-center executives in the telebanking facility are given clear guidelines as to how to speak to the customers,

what questions to ask, and what performance standards are expected. The executives also have access to screens on their computers to prompt them to ask particular questions or to help them in answering some routine inquiries. Further, the information system guides the executives through the required customer data to be filled in during or immediately after the call.

At the macro-level, service managers and designers need to pay attention to how the various elements or sub-processes link together to provide complete service. In telebanking, the service is not so simple that it can be delivered by the executives themselves. It involves a lot many processes like loan application processes, international fund transfer processes, credit card issuing processes, and so on. The whole interrelationship between the different processes needs careful design and development to deliver value to customers and to the organization.

Service product design and development include both tangible and intangible aspects. Usually, the service product design includes the physical environment, customer offerings, and other services. For example, in restaurants such as McDonald's and KFC, the product design includes the physical environment, menu offering, music, customer interaction levels and such other factors.

This unit discusses in detail some important dimensions of service as a product, new facility decision, layout of facilities and service product development process.

7.2 Objectives

After completing this unit, you will be able to

- Define service products.
- Identify different criteria for selecting a service facility location.
- Explain the layout for service facilities.
- Discuss the service product development process.

7.3 Define the Service Product

Service as a product is the concept of selling the services and outcomes a product can provide rather than the product itself. The term is a variant of the "as-a-service" phrasing that has grown along with the popularity of cloud computing -- in, for example, software as a service (SaaS). Indeed, services are a special form of product which consists of activities, benefits or satisfactions offered for sale that are intangible and do not result in the ownership of anything.

During the last few decades, the services industry has become a dominant economic sector in both India and most other advanced economies. With increasing globalization and the development of new technologies, contemporary businesses realized that for survival, they must continuously develop new service

products. Following points highlight the equal importance of products and services.

- Products and services are two closely aligned concepts, and most products have an element of service in them. For example, a car buyer purchases a comprehensive bundle of service benefits, in addition to the tangible components of the car. However, there is a distinct difference between them and it is important to establish some working definitions. One way to think of them is from the clients' point of view.
- When a client asks "what can you make for me?" they are asking about products; when a client asks "what can you do for me?" they are asking about services. While a product is something that can be measured and counted, a service is less concrete and is the result of the application of skills and expertise towards an identified need. A product is something you can point at, whereas a service, as The Economist defines it, is any activity "you can't drop on your foot". But this definition doesn't work when the products are digital in form weightless objects that have no mass or material definition aside from the physical media on which they exist. Even in file-based workflows, there is a distinction between a product being produced and a service provided to fill a need.

Service-product mix: Business involving aspects of both a tangible (physical) good and intangible service, and where typically the quality of service is more important than the physical product. For example, lodging, programming, or training. Almost every product comprises some degree of service-good mix. It is called service-product mix.

New-service product: A "New Service Product" can be defined as an offering not previously available to the customers. It can be the result of additional offerings, radical change in the service delivery process, or incremental improvements in the existing service package or delivery processes, that the customer perceives as new. For example, hyper-local logistics start-ups such as Grofers, Delhivery, Parcelled and Shadowfax developed radical new much-needed delivery services for all types of consumer companies, and in a short time. New service product development covers three key aspects: Service innovation, service system design and service system design tools.

7.3.1 Key Elements of Design and Development of Service Products

Service design often focuses on intangible factors. All service design elements should communicate on the service strategy and its theory. Generally, the key elements of service design process include facility location, facility layout, product and process design, scheduling, quality control, measures, and time standards, demand planning, customer contact level, industrialization, front-line

personnel discretion, worker skills, sales opportunities, standardization of service offering, and customer participation.

a. **Facility location** - Facility location decisions for services are usually based on closeness to the customers. Normally, the companies want wide customer coverage and thus, locate near the basic target markets. On the other hand, the back-office services like the internet connection, processing centers, and call centers should be located nearer to the employee groups.

   If Starbucks wants extensive customer coverage, it should locate itself near its key target markets, primarily lively residential or small business neighbourhoods.

b. **Facility layout** - Facility layout depends on the presence of the customers at the layout. When the customer is not present at the layout, then the decisions are taken based on operational efficiency. Thus, the layout is essential for enhancing the customer experience and to the service functionality.

   Businesses giving importance to facility layout include grocery stores like Walmart and some superstores that emphasize on strategic product placement and customer flows through the stores to maximize convenience and sales.

c. **Product and process design** - These include both tangible and intangible aspects. Usually, the product design includes the physical environment, its customer offerings and other services.

   In restaurants such as McDonald's and KFC the product and process design includes the physical environment, menu offerings addressing local preferences, music, customer interaction levels and such other factors.

d. **Scheduling** - This shows how the services are assigned to the workers. The employees need to work to meet the variable demands of the customers immediately or over a time zone. Customer can demand a product/service directly through physical presence or by using different technologies such as chat, phone, and e-mails.

e. **Quality control, measures, and time standards** - These focus on the customers' needs and the way the needs are addressed through services. Any customer's key concern is the quality of customer service, closely followed by on time delivery. Quality control systems in organizations monitor customer interaction with employees to ensure that employees are accurate, friendly, and quick in resolving the issues. Time standards that normally apply to e-services would be the lead times for delivery, e-mail response time, customers' time spend on phone queue, length of time for order assembly, and time for resolving issues.

f. **Demand planning** - Demand planning depends on the type of service and the urgency of matching supply with demand. Many service areas like restaurants, hotels, trains, etc. use pre-booking, yield management or

reservations to match their supply capacity to demand, while others attempt to match the employee's capacity to customers' demands to reduce the waiting time using different scheduling techniques.

g. **Customer contact level** - It refers to the physical appearance and duration of time spent by a service provider with the customer. This type of interaction happens in three ways:

   a) Direct contact service (the customer is physically present and interacts with the service provider such as healthcare centres),

   b) Indirect contact (interacting in real time through e-mailing, SMS, or live chats),

   c) No contact (Example: ATM machines).

h. **Industrialization** - Industrialization brought machines and equipment and created the shop floor employing workers to operate and maintain them. Emerging phase of industrialization is aiming at replacing workers with advanced technology products like Robots, Internet of Things (IOT), Artificial Intelligence, Machine Learning etc. This refers to the replacement of people with technology. There are many reasons for creating workerless workshops. Most important reason is cost reduction, safety assurance, uniform product quality, higher productivity and competitive advantage. The main objective is to reduce the use of service employees and increase the use of technology that is easier than the former. Maintenance of sophisticated machines brought in technologies like Virtual Reality to take up maintenance services more efficiently.

i. **Front line personnel discretion** - This denotes the flexibility of a service employee while interacting with a customer. This practice brings stability, consistency, and quality in service and at the same time can be used for certain marketing messages. Highly personalized services such as luxury products retail give the employees high flexibility during their customer interaction to encourage customer loyalty.

j. **Worker skills** - Worker skills depend on the service strategy and concept, customer contact type and industrialization level. In case of high customer contact services with higher levels of expectations, the employees require strong soft skills. For low contact services, the employees require more technical skills.

k. **Sales opportunities** - Good sales employees quickly understand customers' requirements and fulfill those requirements in quick time. This phenomenon is apparent with online retail shopping. Several researches have shown that when companies have implemented live chats, their sales closures rise dramatically.

l. **Standardization of service offering** - This is the level of consistency provided in the service. Standardization in services such as hotel franchises and fast food restaurants reduces costs, and helps organizations to manage and control the processes. Increasing technology has helped in mass customization that provides satisfaction and delight for a broader range of customers.

m. **Customer participation** - By shifting some of the service activities to the customer, the service provider can save money, increase efficiency, and place some of the responsibility for service quality and experience in the customers' hands. Customers can participate in activities such as bussing tables at Starbucks, self-serve at McDonald's, etc. This requirement makes the customer responsible for the measuring and mechanism errors.

Example: Google's Service Product Development Process

Google had many service products like: "Gmail, YouTube, Android operating system, Chrome web browser, Google Maps, Google Translate etc.". Google does not have a well-defined process for defining the products. The definition was more guided by the set of Google's core values and principles: (1) What value a product can bring to the large number of customers. (2) Reengineer an idea to innovate and make better product improving by 10 times (not 10% - 10X approach). (3) Release beta versions, collect customer feedback and through rapid iterations improve the product features. This process helped in focusing and investing resources on practically viable, customer-oriented products.

Source: https://maze.co/collections/product-development/examples/ dated September 17, 2021. Accessed on 16th June, 2022

7.4 Facilities Location Decision

The investment required for setting up a new service facility is much less than that required for a manufacturing facility. As a result, there has been a significant growth in new service facilities over the years. Despite this growth, there is a gap in the demand-supply position with regard to service facility locations. Location decisions are dependent upon the choice of the target markets. The target markets also decide the number, size and other characteristics of locations. Decisions regarding the number of locations in a geographical area and the location of service facilities in the area are complex and critical for the long-term profitability of a service organization. These decisions become even more complex if several locations in different geographical areas with multiple locations under each are available. In effect, finding the best option for locating a service facility can be very time consuming.

Location strategies of some companies:

i. Walmart located its sprawling discount stores in suburbs of cities, or in small towns, where its competitors did not go. It reaped the advantages of cheaper real estate and larger store space, utilizing it to expand the product mix on its shelves, thus attracting large enough crowds of shoppers to make it self-sustainable.

ii. McDonald's is another example of good location, in residential and commercial hubs, and next to highways.

iii. Crossword experiments with a small selection of books in a larger number of locations, unlike Gangarams of Bangalore and Oxford in Kolkata having large stores with lot of browsing space.

iv. Food world has rapidly expanded its reach in the last few years through opening stores that are smaller than the international norm.

While the focus of the manufacturing sector is on minimizing costs (as the manufacturing firms find that costs tend to vary substantially among locations), the focus of the service sector is on maximizing revenue as they find that location often has more influence on revenue than on cost. This means that location focus for service firms should be on determining the capacity of business and revenue.

There are eight major factors that may influence the facility location decision in the service sector:

i. Purchasing power of the customer-drawing area

ii. Service and image compatibility with the demographics of the customer-drawing area

iii. Competition in the area

iv. Quality of the competition

v. Uniqueness of the firm's and competitors' locations

vi. Physical qualities of facilities and neighbouring business

vii. Operating policies of the firm

viii. Quality of the management

It is often necessary to locate competition nearby. Some of the examples are:

- Large department stores often draw more shoppers when competitors are close by.
- Shoe stores, fast-food restaurants, book shops etc., are located in one area.
- Sari shops, jewellery shops etc. have been operating in exclusive markets.
- Supermarkets are located in the same area and try to beat competition through different offers.

Example: Facility Location Optimization for Park-and-Ride

City of Nashville, a metropolitan city in the State of Tennessee, US was planning for a better implementable park-and-ride (park own vehicle and ride on the public transport - P&R) facility. The objective was to identify facilities with optimal utilization of the available space. Right choice of P&R locations, reduce single user own car driving, ease traffic flow, reduce congestion, improve travel times and also contribute to reduced greenhouse gas emissions. The city adopted a framework for demand, through a discrete method, using "multinomial logit model". After that, "mixed integer linear programming optimization model" was implemented to identify the optimal locations using existing data at Nashville. "Sensitivity analysis" was operated on the derived solutions for further refinement.

Source: https://www.sciencedirect.com/science/article/pii/S2590198222000410 dated March 2022. Accessed on 16th June, 2022

Activity 7.1

Access to customers plays a very important role in deciding facility locations for service operations.

With more and more products becoming technology dependent, customer service is becoming a unique selling proposition (USP) considered by customers.

One major reason for migration from rural areas to cities is because of the services like education and healthcare facilities, besides employment opportunities. Opportunities for self-employment through street- side food vending etc. are also considered while locating service facilities.

- As a person unable to find a suitable job due to severe impact of Covid-19, you have decided to run an eatery in Hyderabad.
- Identify the type of facility you want to create covering the selection of location, layout, customer facilities etc.
- Examine the factor that will provide you an edge over other competitors in the facility location you choose for the proposed activity.

Check Your Progress - 1

1. Which of the following is not a key element of service design and development process?
   a. Product design
   b. Supply planning
   c. Time standards
   d. Industrialization level
   e. Facility layout
2. Which decisions for services are usually based on closeness to the customers?
   a. Facility location
   b. Facility layout
   c. Time standards
   d. Industrialization level
   e. Scheduling
3. Which of the following refers to the replacement of technology for people?
   a. Scheduling
   b. Customer contact level
   c. Industrialization
   d. Demand planning
   e. Front line personnel discretion
4. Which of the following may not be included during product design and development process in a restaurant like KFC?
   a. Music
   b. Menu offerings
   c. Physical environment
   d. Customer interaction level
   e. Manpower requirement
5. Which of the following is not a key factor for facility location decision in the service sector?
   a. Competition in the area
   b. Quality of the competition
   c. Operating policies of the firm
   d. Quality of suppliers
   e. Quality of the management

7.5 Layout of Facilities

Layout is one of the vital decisions that assist the long run efficiency of operations. Layout is very strategic because it directs an organization's competitive priorities in regard to capacity, flexibility, processes, product and cost, as well as quality of work life, customer contact, and image. An effective layout can help a business to achieve a strategy that may lead to differentiation, low cost, or quick response.

For example, Decathlon follows a differentiation strategy by making heavy investments in warehouse layouts that contribute to fast, accurate sorting and shipping to its about 40 outlets in India.

The objective of layout strategy is to develop a cost effective and efficient layout that meets a firm's competitive needs.

The fundamental difference between a service facility and a manufacturing facility is that service facilities exist to bring together, the customer and the organization's services. Features like easy access from freeways and busy thoroughfares well organized parking lots, well-marked entries and exits, powered floors, escalators and lobbies for customers have become common to increase footfalls.

Two extremely different types of layouts of service facilities exist based on the degrees of customer contact. At one extreme is the layout which is totally designed around the customer receiving service functions and the other is that layout, which is designed around technology, processing of physical materials. Banks are the best examples of layout designed around customers. Such service facility layouts give importance to customer convenience, but treat the employee work areas for information processing and financial recording keeping etc. as secondary.

On the other hand, the best examples for service facility layouts that focus more on technology or physical materials processing are hospitals. The hospital layout considers application of medical technologies such as surgery, radiology, laboratory tests, patient rest and recovery, patient feeding and the effective employment of doctors and nurses healing skills as the primary factors as opposed to receiving patients, setting accounts and discharging patients.

Some other service facilities strike a balance between these two extremes discussed above. Restaurant service is the best example for a via media, where attention is diverted towards customer and servicing as well as on processing and preparation of food.

Thus, any service layout design must consider how to achieve the following:

i. Higher utilization of space, equipment, and people

ii. Improved flow of information, materials, or people

iii. Improved employee morale and safer working conditions

iv. Improved customer interaction

v. Flexibility

In the era of increasing short-product-life-cycles, layout designs need to be viewed as dynamic. This means considering small, movable, and flexible equipment. Store displays environment, need to be impermanent with modular office desks and partitions, and prefabricated warehouse racks. To make swift and effortless changes in product models, operations managers must try and build flexibility into the layouts. To obtain flexibility in layout, managers cross train their workers, maintain equipment, keep investments low, place workstations close together, and use small movable equipment. In certain cases, equipment on wheels is appropriate in anticipation of the next change in product, process, or volume.

Example: Location Selection for Hospitals Operations Management

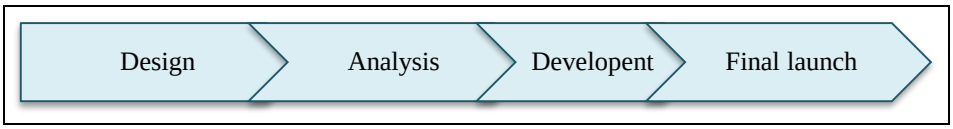
Gloucestershire Hospitals, UK, was aiming to identify the location for operation. As a healthcare group, they preferred mixed layouts depending on the individual needs of their specific services units. For units having process type approach, the layouts need to facilitate easy movement of resources. Operating rooms were laidout as fixed, for their patients to remain at one place. But all laboratories were designed to be flow systems to facilitate nearness to patients as and when needed.

Source: https://ivypanda.com/essays/gloucestershire-hospitals-operations-management/, dated November 18, 2020 . Accessed on 16th June, 2022

7.6 Service Product Development Process

In the past, service product developers often did not follow any new service development process, but instead developed their own ad-hoc processes. They followed this approach for several reasons. Due to the intangible nature of services, it is difficult to prototype and field-tests any new concept. Moreover, most service firms do not have formal research and development departments. Even though service providers are often slow in adopting formal new service development processes, the successful service providers are more likely to adopt to new product development methods. Usually, a formalized product development process consists of four key steps: Design, Analysis, Development, and Final launch as shown in Figure 7.1.

Figure 7.1: The Four Key Steps



Source: ICFAI Research Centre

The product development is conceptualized through a life-cycle approach, covering design to deployment of the product. In addition, the PDCA type of a continuous improvement approach is followed. Planning activities are design and analysis; and development and deployment come under activities pertaining to execution. Formulation of a new service goal and strategy are done during the design stage followed by idea generation, screening, concept development, testing and deployment. Analysis pertains to business analysis and project approval.

Example: A Service Product Development

Typeform was "software as a service" platform. It provided tools to build software applications for: "online forms, surveys, quizzes, landing pages and more". As part of the development process, through a one-week design brain storm, they developed the idea; connected the key components of the proposed tool; logic map by estimating costs for time and allied resources. This brain storm was headed by logic designer and manager of the products. The other contributors included: "researchers, marketing people of the product, and development engineers". They built a prototype to "test, improve, and validate the idea" with small set of actual users, and after resolving the identified issues and implementing the given feedback, slowly was made available to the entire user community.

Source: https://maze.co/collections/product-development/examples/ dated September 17, 2021. Accessed on 16th June, 2022

Development stage covers design of service, process, system, marketing personnel training, pilot run, and testing in all these stages. Service launch includes total deployment and subsequent reviews. Service delivery system is the focus of this approach covering people, technologies, systems and procedures for designing and delivering the service. Cross-functional teams are supported to continuously develop service delivery systems.

Service designing, unlike in manufacturing, encompasses the careful sequencing. multiple stages with the involvement of customers and ensuring the stages pertain to the constraints therein, in the form of human resources, infrastructure, time, and the overall cost of delivery.

One of the major techniques generally utilized towards the development and designing of services is called as the Service Blueprint.

The Service Blueprint

A service blueprint is defined as an assistance plan, in which the stages of a service delivery process are sequentially placed, with simultaneous and multiple interactions amongst the customers, the front-end staff, the back-end staff, and the interfacing technology.

The service blueprint is designed to accommodate customers as an integral part of the service generation and the delivery process, as also to encapsulate the ensuing customer experience at each stage of the service delivery process. The experience is later documented and analyzed for the identification of lacunae against each process parameters, and corrective or remedial actions are suggested or implemented to avoid similar scenarios in the future.

In the development of a typical service blueprint, 5 important parameters are required to be maintained:

i. The actions of the customers

ii. The actions of the front-end employees/visibly contactable employees

iii. The actions of the back-end employees/invisibly contactable employees

iv. Processes which support the overall service delivery

v. Physical-based evidence.

Activity 7.2

Service Blueprint is a plan to assist the management in defining the stages of a service delivery process, ensuring ease of customer interactions and safety of co-workers.

An Indian company came out with a 'Made in India' smart phone and planned to provide sales and service facilities at reasonable prices to beat competition from foreign brands.

They invited you for an interview to adjust your suitability to head one of the outlets in Hyderabad.

At the time of interview, you are required to present a Service Blueprint as conceived by you for the proposed outlet.

- Identify the factors you consider for designing a service blueprint.
- Examine the specific aspects you intend to cover in your proposal and justify their selection.

Check Your Progress - 2

6. Which of the following is supported by an effective layout of an organization in achieving a service strategy?
   a. Differentiation
   b. Sales and marketing
   c. Investment
   d. Warehousing
   e. Shipping
7. Which of the following is not a step of the service product development process?
   a. Design
   b. Analyze
   c. Control
   d. Development
   e. Launch
8. Which of the following is not a major consideration for designing a service blueprint?
   a. Actions of the customers
   b. Actions of the front-end employees
   c. Actions of the back-end employees
   d. Actions of suppliers
   e. Service delivery processes
9. How service location layout designs should be viewed in the era of short-product-life-cycles?
   a. Organizing
   b. Vital
   c. Dynamic
   d. Informative
   e. Flexible
10. Which of the following is not a layout design consideration for a service product?
    a. Higher space utilization
    b. Competition in the area
    c. Improved flow of information
    d. Improved customer interaction
    e. Flexibility

7.7 Summary

- New service design and development poses many challenges for firms because of the intangible nature of the service encounters, inability to prototype and test new concepts, and a propensity to use ad-hoc methods.
- Facility location decision is a critical element in determining revenue for the service, retail, or professional firm.
- For service organizations, analysis is typically made of a variety of variables such as purchasing power of a drawing area, advertising and promotion, competition, physical qualities of the location, and operating policies of the organization.
- Layout of facility makes a substantial difference in the operating efficiency. A good service layout could be an effective juncture for playing out the service encounter.
- Several service development processes can be used as design tools that assist the designers in evaluating service concepts for improving efficiency, customer satisfaction, quality market share and profitability.

7.8 Glossary

Differentiation: Differentiation is the process of distinguishing a product or service from others, to make it more attractive to a particular target market.

Globalization: Globalization means the opening of local and jingoistic perspectives to a broader outlook of a unified and interdependent world with barrier free transfer of capital, goods, and services across national frontiers.

Quality control: A process through which an organization seeks to ensure that product quality is maintained or improved and errors are reduced or eliminated.

Scheduling: Scheduling is the technique by which specified work is assigned to resources that complete the work.

Service Blueprint: A service blueprint is defined as an assistance plan, in which the stages of a service delivery process are sequentially placed, with simultaneous and multiple interactions amongst the customers, the front-end staff, the back-end staff, and the interfacing technology.

Service Design: Service design describes and prescribes the procedures to be followed in service delivery and also guides how to interact with other resources such as manpower, materials and equipment.

Service Innovation: Service innovation is an innovative improved service concept that is taken into practice. It can be a new customer interaction channel, a distribution system, a technological concept or a combination of them. A service innovation always includes replicable elements that can be identified and systematically reproduced in other cases or environments.

Service Strategy: Service strategy is a set of plans and policies by which a service organization aims to meet its objectives.

Standardization: A framework of agreements to which all relevant parties in the organization must adhere to ensure that all processes associated with the creation of a good or performance of a service are performed within set guidelines.

Value: Ratio of quality to price paid. Competitive "happiness" is being able to increase quality and reduce price while maintaining or improving the profit margins.

7.9 Self-Assessment Test

1. If you could locate your new software development company anywhere in the world, which place would you choose, and why?
2. In a supermarket, what departments should be located first along the customers' path? Which should be located last?
3. Describe the key elements for design and development of service products.
4. Explain the location strategy of some of the successful service firms.
5. Describe the product development process.

7.10 Suggested Reading / Reference Material

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7.11 Answers to Check Your Progress Questions

1. (b) Supply planning

Supply planning is not a key element of service design and development process.

2. (a) Facility location

Facility location decisions are usually based on closeness to the customers.

3. (c) Industrialization

Industrialization refers to the replacement of people by technology.

4. (e) Manpower requirement

Manpower requirement may not be included during product design and development processes in a restaurant like KFC.

5. (d) Quality of suppliers

Quality of suppliers is not a key factor for facility location decision in the service sector.

6. (a) Differentiation

Differentiation is supported by an effective layout of an organization in achieving a service strategy.

7. (c) Control

Control is not a step of the service product development process

8. (d) Actions of suppliers

Actions of suppliers is not a major consideration for designing a service blueprint.

9. (c) Dynamic

Dynamic service product layout designs should be viewed as dynamic in the era of short-product-life-cycles.

10. (b) Competition in the area

Competition in the area is not a layout design consideration for a service product.

Unit 8

Innovation and Service Development

Structure

"Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service."

- Peter Drucker

8.1 Introduction

The whole world is witnessing useful technological advancements through innovation; sometimes may be disruptive too. Especially in services, some recent examples which benefitted both business organizations and public services can be cited as: Uber, Ola, GPay, various Apps, Amazon, and Cloud computing etc.

In the previous unit, Design and Development, we discussed in detail some important dimensions of service as a product, new facility decision, layout of facilities and service product development process.

This unit is about finding new and innovative ways to deliver service, enhancing service products, and increasing productivity by managing networks, technology, and information. It describes how organizations have been able to devise completely new services to change the way we live. All this poses some challenges for the service operations manager. It drives us to think and plan long term to ensure that future investment delivers significant improvements in performance that will be essential for survival.

It also makes us think more globally about service delivery. Thinking globally for service operations has until recent times consisted largely about how companies might grow by moving into new geographical markets, being concerned about

how service concepts might translate from one national culture to another. Even the omnipresent McDonald's has made changes in its offerings to reflect local requirements.

Today technological advances have resulted in new service developments such that elements of service operations that were location-specific can be carried out almost anywhere in the world. 'Virtual' teams of experts can work on client's projects wherever they are, rather than have the expense and time of physically assembling the team on the client's premises. Innovative methods are seen in medical care with initiatives like Telemedicine, mobile diagnostic labs, use of robots in surgeries etc. Food processing industry also is undergoing many innovative initiatives like home delivery from anywhere, through Swiggy and Zomato.

Retail chains are very popular for their efficient innovative procurement, warehousing and delivery processes. Uber and Ola brought in ride-sharing to ease the commuting problems of people at reasonable costs. Thus innovation and creativity are sweeping the service operations management.

8.2 Objectives

By the end of the unit, you should be able to

- Explain the role of innovation and creativity in service development.
- Discuss the culture of innovation.
- Relate link improvements to customers' needs.
- Identify drivers of innovation.
- Discuss the commercial convergence process.

8.3 Innovation and Creativity

Recent years have seen major changes in the nature of service. Networks and information technology have enabled better operations management and have been able to create some entirely innovative and creative services. These service developments can be divided into four categories:

1. Integrated information provision
2. Integrated services
3. Service on demand
4. Intelligence networks

The critical lesson for operations managers is to recognize that service theories and concepts are changing rapidly and new service providers may be providing better value for customers by taking advantage of changes in networks and information technology. The pace of change provides both opportunity and challenge to the service operations manager, and requires innovation and creativity in the form of

- Investments in future-proof technologies
- Sophisticated but reliable technology

- Large, robust, reliable, and up-to-date databases
- More centralized operations
- Technology knowledgeable staff
- Involving users in the development of unknown services
- Maintaining a personal relationship with the customers, despite limited direct interaction

For example, some information-based organizations see opportunities for developing advanced services following the creation of databases based on the original service. In such cases, the potential rate of innovation may be quite rapid, which in itself present significant challenges for the operations manager.

Example: Innovation at Kroger

Kroger was a US retail giant. They innovated on a new "Scan, Bag, Go app", allowing shoppers to scan their shopped items, and get an overview of the present totals on real time basis. Shoppers can skip the check out, as they can pay through the App. This avoided long checkout lines for customers. Thus, Kroger ensured customer value through innovative offering. These innovations also smoothen the customer journey during touch points enhancing the customer delight.

Source: https://talkradionews.com/what-is-krogers-scan-and-go-service-how-it-works-other-faqs/#r, dated July 11, 2022. Accessed on 2nd August, 2022.

8.4 Culture of Innovation

You will find some service organizations more successful than their competitors despite having similar technologies, processes, and skills. What makes them different is the nature of organizational culture that drives the service operations managers in the direction of innovation and creativity. There are different schools of thought on organizational culture.

One proposes that culture is something tangible, almost to the point where it can be written down in much the same way that an organization chart can be included in the company's operating manual. In this sense, culture is something that the organization possesses in much the same way as it might possess a set of resources or products.

The opposing view is that culture is much less tangible, and in reality only exists when people in the organization talk to each other and, by their words and behavior, act out the culture of the organization. Such organizational culture is also called "culture of personality". The culture of the organization is often hidden below the surface of organizational life, requiring a degree of awareness to understand what is going on.

8.4.1 Schein's Model of Organizational Culture

Schein (1985) is one of the leading thinkers of organizational culture for innovation. His model (Figure 8.1) suggests that organizational culture has a number of levels.

It is dangerous to assume that what is visible on the surface is all that there is to the organization. There is much in the organization that "lies beneath the surface", often exerting a powerful influence on the decision-making process. This could be one of the reasons behind why irrational decisions are frequently made by senior managers who are influenced by the unspoken aspects of the way that organizations think about it, what it is good at, how it assesses the success, and what it values.

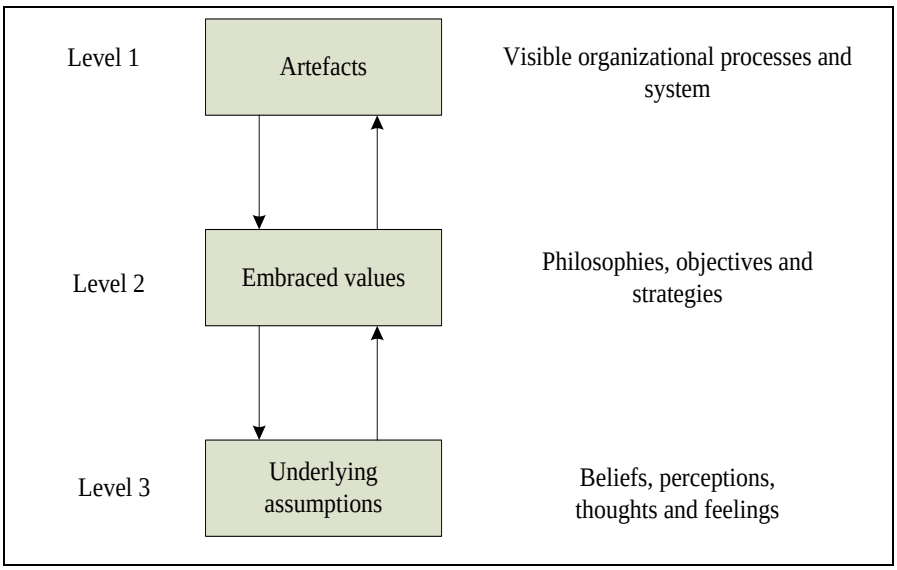
Schein proposed the following (Figure 8.1) three levels of organizational culture:

1. **Artifacts**: They are the visible aspects of the organization. Although Artifacts may be visible, it is very often not clear what they normally mean for the organization. For the service operations, some understandings may be gained by celebrations of success of good customer service, or in the position of champion of service within the organization.

   Other visible signs of the relevance of culture to service organizations are the measurement and control systems employed. Schein makes an important point that it is very dangerous to draw a conclusion from the evidence of Artifacts alone, without knowing the deeper levels of culture that may explain them. However, customers will only look at the physical evidence and draw their own conclusion about the service.

   Figure 8.1 shows the levels of organizational culture.

Figure 8.1: Levels of Organizational Culture



Source: ICFAI Research Centre

2. **Embraced values**: This next level of culture operates at the cognitive level. It describes the stated strategies and beliefs of the organization. Thus, this level includes the aspects of the company's mission statement. The issue here is that this aspect of culture still refers to a conscious level of human interaction and thought, and there is frequently a sense that these embraced values are what the organization might like itself to be, rather than what it is in reality. It is relatively common for organizations to prepare statements that might contain phrases such as "we value individuals" or "we work together as a team", which may not necessarily reflect the experience of the members of the organization.

   In the same way, the organization might have stated its ambitions in terms of its basic service strategies that are also not borne out in practice.

3. **Underlying assumptions**: The third category of values to be identified is those that the organization is less happy to publish to the outside world, and frequently prefers to ignore internally. These values are those aspects of the organization that it is not proud of, but nonetheless are part of its culture. For example, a blame culture, or one in which junior employees are not encouraged to challenge management decisions has implications for operational performance and must be recognized.

   Underlying assumptions refer to those unconsciously held views that are un-discussed and generally unchallenged. Basic assumptions are those beliefs and ways of working that have worked well for the organization in the past and are, indeed, its secret of success in the past. These basic assumptions are often expressed in rather simpler, even primitive, terms than many competitive strategies. It is this primitive aspect of the basic assumption that means that it is often deeply held and fiercely defended if anyone challenges it or suggests it should be changed.

8.4.2 Strategies for Cultural Changes for Innovation

In the year 1996, Bate suggested four basic approaches for cultural changes for innovation:

1. **Consultative:** This approach is characterized by a great deal of communication and involvement. It is excellent for gaining commitment, but poor at implementing a radical solution.

2. **Progressive**: This approach is useful when there is not much time for a consultative approach. Senior service managers have to implement change rapidly, frequently upsetting the staff in the process. This kind of aggressive approach is effective in implementing major changes rapidly but is poor in gaining commitment and ownership of the result.

3. **Educative**: Here, the management provides material and training to employees explaining the necessity of change. It is based on the view that if people can rationally understand the need for change, they will be happy to support it. Education and training have been shown to be effective, but still, people do not react to changes rationally.
4. **Corrosive**: This is akin to the organization's grapevine. Senior management lets loose the key messages at key points throughout the organization. This approach is much favored by those who like to attempt to manage groups of professionals, who often resist any form of direct control.

Most cultural change processes contain elements of all four approaches. Bate then outlined five parameters to assess the success of the change process:

1. **Expressiveness**: This measures the extent to which the change process communicates innovation and creativity. This is what he called "hearts and minds". A new mission statement that captures the imagination of the employees will be invaluable here, particularly if the statement is lived up to by senior management.
2. **Commonality**: Culture develops when people interact with each other. This parameter assesses to what extent everyone speaks the same language on innovation and creativity. The question here is 'Is there a sense of solidarity because we know what we are trying to achieve?'
3. **Penetration**: To what extent the change really got inside the organization. Has it begun to change the way that things are done? Does it have the point where it cannot be ignored?
4. **Adaptability**: Is the change process able to deal with the diversity of situations represented in a large, complex organization? Can those responsible for implementation maintain the essence of the change? Can it be questioned and rethought in key areas without loss of credibility?
5. **Durability**: Will it transcend the departure of the chief executive? Is it clear that this change will not go away?

Example: Innovation Culture at Amazon Web Services

Culture of innovation was embedded in every step of Amazon's activities and was the root cause of success. At Amazon, innovation was defined as everyone's responsibility and just not that of R and D alone. These processes were deep rooted in the organization's culture. Even during the hiring of people, they were questioned on the principles of leadership and culture at Amazon and the individual's fit to the culture of Amazon. Empowerment was with everyone to generate new innovative ideas.

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Even during solving the customer issues, they adopted a 'Working Backwards' approach which started with customer problem/challenge first and end by moving to the solution.

Source: https://ideadrop.co/innovation-culture/webinar-creating-culture-of-innovation-amazon/ dated 5th January, 2021. Accessed on 22nd June, 2022

8.5 Linking Improvements to Customer Needs

There are many different methods available to gather information for understanding customer needs. The methods broadly are divided into those that are primarily used for understanding how customers are satisfied, and those that are primarily used for assessing and improving satisfaction.

Understanding how customers are satisfied with the service improvements:

- **Questionnaires and surveys**: The first approach, which uses questionnaires and surveys, is the most quantitative approach and can be structured around different quality factors and analyzing each factor. The other, more qualitative, approaches tend to collect descriptive data and provide the interpretation of events by customers in their own words. This creates more difficulties in analysis and interpretation in order to extract meaningful summaries. However, they do have the benefit of providing ideas and examples that managers and employees can use and discuss to understand and improve their services. Questionnaires and surveys, written or verbal, can be a good means of soliciting opinions about an organization's services, and for identifying what customers find important.
- **Focus groups**: Focus groups usually comprise groups of about 15 customers with a trained facilitator, brought together to discuss one or a few aspects of particular existing or planned service.
- **Customer advisory panels**: They are similar to focus groups but are likely to meet regularly with a more structured agenda.
- **New/lost customer surveys**: New/lost customer surveys are very useful ways of finding out what attracts customers to the organization and indeed, why they left. While many organizations are now conducting exit interviews, the most successful rely heavily upon the direct involvement of senior managers to ensure appropriate access, information, and action.
- **Complaint/compliment analysis**: Complaint/compliment analysis can be undertaken upon customers' voluntary contributions, although they tend to be more negative than positive. They do provide information about the extremes of delight and dissatisfaction.
- **Critical incident technique (CIT):** It attempts to identify the things that delight and dissatisfy customers. Critical incidents are events that contribute to or detract from, perceived service or product performance in a significant way. The CIT instrument usually comprises two questions. The first question

asks customers to think of a time when they felt very pleased and satisfied with the service received and to describe, in a few sentences, the situation why they felt so happy. The second question requires customers to think of a time when they were unhappy and dissatisfied with the service they received and to describe, in a few sentences, why they felt this way.

- **Sequential incident analysis**: Sequential incident analysis combines CIT, walk-through audits, and process mapping. Customers are 'walked through' a pre-prepared process map of the service they have recently encountered and asked for their experiences of each stage of transaction in the process. This technique not only identifies critical situations but also potentially critical ones.

Example: Delivering Customer Services Satisfying the Needs

JetBlue airlines got a tweet from one of their customers on flight that, he missed picking his Starbucks coffee, before boarding the flight. As an instantaneous response, based on this tweet, within very short duration, JetBlue put their customer service team into action to deliver "Starbucks vent mocha" at the customer's seat. No doubt, customer was delighted about JetBlue services and their response even for a tweet. Customers may not always look for big gestures, but need to feel they're valued. Even simple and timely responses count and lead to happy and loyal customers.

Source: https://www.qualtrics.com/blog/customer-service-examples/ updated July 4, 2022. Accessed on 4th August, 2022

Activity 8.1

There are many different methods available to gather information for understanding customer needs. The methods broadly are divided into those that are primarily used for understanding how customers are satisfied, and those that are primarily used for assessing and improving satisfaction.

Among all such methods, one popular method used by individual researchers and organizations is the Questionnaire method of eliciting information to analyze and offer a service menu to the targeted customers.

- You are required to explain the you are required to explain the questionnaire method for conducting a survey to open a Quick Service Restaurant in your locality.
- What are the innovative and creative techniques you would like to adopt to get information and suggest a service strategy for the proposed restaurant?

Check Your Progress - 1

1. Service developments can be divided into four categories. Which of the following is not a service development category?
   a. Integrated information provision
   b. Integrated values
   c. Integrated services
   d. Service on demand
   e. Intelligence networks
2. Which of the following is a level out of the three levels proposed by "Schein"?
   a. Product design
   b. Artifacts
   c. Time standards
   d. Industrialization level
   e. Facility layout
3. Which of the following describes the stated strategies and beliefs of the organization?
   a. Underlying assumptions
   b. Perceptions
   c. Thoughts
   d. Embraced values
   e. Feelings
4. Which approach is characterized by a great deal of communication and involvement?
   a. Progressive
   b. Educative
   c. Consultative
   d. Corrosive
   e. Commonality
5. Which of the following measures the extent to which the change process communicates innovation and creativity?
   a. Expressiveness
   b. Commonality
   c. Penetration
   d. Adaptability
   e. Durability

8.6 Drivers of Innovation

In the new service development process, it is important to differentiate between radical and incremental innovations. Radical service innovations require a different process and design approach than incremental innovations. Radical innovation is either new to the world or new to the market. Recent radical innovations include online auctions such as OLX.in and Quiker.com or facilitating services such as Sulekha.com: both of these concepts bring together buyers and sellers and provide information and advice to both parties. Usually, radical innovation is developed through some form of the new service development cycle. After the innovation is launched, its development process becomes the foundation for further incremental innovation. Firms that continuously cycle through the process steps can build service innovation competence.

For a start-up business, a new service in a market that is already served by existing services is being provided. For example, Internet travel planning site RedBus.com along with Neeta Travels, allows automated travel agency service. Further, for new services for a market presently served, new service offerings to an existing customer of an organization is provided. Example, bank ATMs or kiosks in supermarkets and other retail establishments.

Incremental innovations happen in the form of service line extensions, augmentations of the existing service line such as adding new menu items, new routes, and new courses being given. For example, Indigo Airlines adding a new destination or McDonald's adding a new sandwich. Secondly, for service improvement, changed features of current services are being offered. For example, Delta Airlines and British Airlines use ATM-like Kiosks to distribute boarding passes to passengers.

Lastly, the style changes, which is most common of all "new services"; modest forms of visible changes that affect customer perceptions, emotions, and attitudes, on-site with style changes that do not change the service fundamentally, only its appearance. For example, Funeral homes offer abbreviated ceremonies that celebrate life instead of mourning death, on-site full-service flower shops, and a brighter appearance.

Example: Building Innovation Culture

Barton Malow was a famous management group for construction with an employee-owned approach. The key drivers for an innovative approach at Barton Malow included: To build a constant employee engagement experience for sharing the development initiatives; work together with colleagues on these ideas; discover different pain areas of the employee groups; and assess and understand about any tools failing them.

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Barton Malow used innovative methods by showcasing game mechanics, where the employee was engaged in fun way, and business problems were solved adopting an "Innovation Game" approach. The result was exciting increase in employee participation, engaging culture, leading to 29,400 ideas, improvements and implementable solutions in construction field.

Source: https://www.planbox.com/4-companies-with-jaw-dropping-innovation-case-studies/ dated August 17, 2021. Accessed on 22nd June, 2022

8.7 Commercial Convergence

Innovation is a product of both technological and commercial convergence and it has permanently altered the process of the service delivery.

Exhibit 8.1 explains innovation at KLM Dutch Airlines.

Exhibit 8.1: KLM Royal Dutch Airlines

KLM Royal Dutch Airlines is not only one of the world's oldest airlines; it is also one of the most forward-thinking. Today, despite the global uncertainty created by the ongoing COVID-19 pandemic in 2020 and widespread cost-cutting initiatives across the industry, innovation remains as important as ever to the carrier.

Within the Transformation Office sits the Radical Innovation Team, which is responsible for orchestrating the KLM innovation ecosystem, co-creating innovation strategy, and accelerating innovation projects that focus on the most strategically important topics for the business.

"You don't do innovation at the head office, on the eighth floor, behind your laptop; you do it where the operation is and with the people who are working there," KLM's Arlette van der Veer, Project Manager Radical Innovation, explains to FTE. "We have a lot of innovative colleagues throughout the company – they are scattered throughout all the different divisions and departments."

Source:https://www.futuretravelexperience.com/2020/08/klms-radical-innovation-team-delivering-meaningful-change-for-the-airline/

Salient features of commercial convergence are:

1. Technological Innovations
    - Development of "smart" mobile telephones as well as Wi-Fi high-speed Internet technology that links users to the Internet from almost anywhere
    - Voice-recognition technology
    - Websites
    - Smart cards
        - Store detailed information about the customer
        - Act as an electronic purse containing digital money

2. Increased accessibility of services
3. Deliver the right information or interaction at the right time
4. Create and maintain up-to-date and real-time information

Example: Commercial Convergence Through IT/OT

Schneider Electric and Platinum Electrical Engineering (alliance partner) work in support of digital transformation and business strengthening of their customers. Their expert engineers guide the clients to transform to "converged systems" in secure way, with higher efficiency and low costs. One such project was for a client on IT/OT (Information Technology/Operations Technology) convergence. The client decided on enhancement of the "manufacturing execution system (MES)". A conventional approach was financially infeasible. The engineers' team extracted data from machine plants and through wireless networks stored production data direct on cloud. The analyzed information was fed back as input, through the operators leading to ensured better business decisions. This also reduced earlier micro stoppages at production by knowing the reasons. Thus IT/OT convergence helped in better decisions and reduction in unanticipated downtime, leading to savings.

Source: https://blog.se.com/machine-and-process-management/2022/05/31/manufacturers-can-boost-performance-and-defer-capital-investment-through-it-ot-convergence/ Accessed on 22nd June, 2022

Activity 8.2

Radical innovation is often defined as the commercialization of products and technologies that have a strong impact on two dimensions: the market, in terms of offering wholly new customer benefits relative to the previous product generation in the category, and the company, in terms of its ability to create new businesses.

You are required to identify a few examples in Indian industry where radical innovation is happening.

- As a customer, take examples of one familiar bank, one hospital and one restaurant and explore the possibility of radical innovation in these service organizations.

Check Your Progress - 2

6. Radical service innovation is
   a. Augmentations of the existing service line
   b. Changes in features of services that currently are being offered
   c. New to the world or new to the market services
   d. New sales and marketing strategy
   e. Quick Delivery
7. Incremental innovations happens in the form of
   a. Differentiation
   b. Service line extensions
   c. Focus
   d. Quick response
   e. Cost reduction
8. Which of the following is not a technological innovation?
   a. Voice-recognition technology
   b. Websites
   c. High-speed Internet technology
   d. Augmentations of the existing service line such as adding new menu items
   e. Smart cards
9. Use of ATM-like Kiosks to distribute boarding passes to passengers
   a. Disruptive innovation
   b. Radical innovation
   c. Auto innovation
   d. Continuous innovation
   e. Incremental innovation
10. Netflix and Apple are examples of
   a. Disruptive innovation
   b. Radical innovation
   c. Auto innovation
   d. Continuous innovation
   e. Incremental innovation

8.8 Summary

- In recent times, networks and information technology have enabled better operations management and have been able to create some entirely innovative and creative services.
- These new service developments can be divided into four categories: Integrated information provision, integrated services, service on demand, and intelligence networks.
- Culture may be considered to be tangible or intangible, and to exist at three levels: as Artifacts, as embraced values, and as underlying assumptions.
- Global businesses must understand potential conflicts between organizational values and cultural norms.
- There are four strategies for change: progressive, consultative, educative, and corrosive.
- There are many different methods available to gather information for understanding customer needs such as questionnaires and surveys, focus groups, customer advisory panels, new/ lost customer surveys, complaint/ compliment analysis, critical incident technique, etc.
- In the new service development process, it is important to differentiate between radical and incremental innovations.
- Radical service innovations require a different process and design approach than incremental innovations. Innovation is a product of both technological and commercial convergence and it has permanently altered the process of the service delivery.

8.9 Glossary

Artifacts: Objects made by human beings, especially with a view to subsequent use.

Creativity: Creativity is a phenomenon whereby something new and somehow valuable is formed.

Culture: The combination of attitudes, customs, and beliefs that distinguishes one group of people from another.

Database: An organized collection of data.

Differentiation: Differentiation is the process of distinguishing a product or service from others, to make it more attractive to a particular target market.

Focus Group: A focus group is a form of qualitative research in which a group of people is asked about their perceptions, opinions, beliefs, and attitudes towards a service or product.

Information Technology (IT): Information technology is the application of computers and telecommunications equipment to store, retrieve, transmit, and manipulate data.

Innovation: Innovation is a new idea, a more effective device or process. Innovation can be viewed as the application of better solutions that meet new service requirements.

Organizational Culture: The values and behaviors that contribute to the unique social and psychological environment of an organization.

Value: Ratio of quality to the price paid. Competitive "happiness" is being able to increase quality and reduce price while maintaining or improving the profit margins.

8.10 Self-Assessment Test

1. Explain how innovation and creativity are important for service development.
2. Describe the culture of innovation.
3. Explain the different methods for understanding customer needs.
4. What is the primary difference between radical innovation and incremental innovation?
5. Explain the salient features of commercial convergence.

8.11 Suggested Reading / Reference Material

1. Chase R. B., Ravi Shankar, Jacobs F. R. (2018), Operations and supply chain management, McGraw Hill, 15th edition.
2. Haskett J. L. (1986), Managing in the service economy, Harvard Business School Press.
3. Nitin Joshi, S. Rajagopalan (2019), Service Operations Management: Towards Excellence, Himalaya Publishing House, 1st edition.
4. Mathur S. S., S Mathur and Kenyon A. (2017), Creating Value: Successful Business Strategies, Routledge, 2nd edition.
5. Robert Johnston, Michael Shulver, Nigel Slack and Graham Clark (2020), Service Operations Management: Improving Service Delivery, Pearson, 5th edition.

8.12 Answers to Check Your Progress Questions

1. (b) Integrated values

Integrated values is not a service development category.

2. (b) Artifacts

Artifacts is one of the three levels proposed by Schein.

3. (d) Embraced values

Embraced values describes the stated strategies and beliefs of the organization.

4. (c) Consultative

Consultative approach is characterized by a great deal of communication and involvement.

5. (a) Expressiveness

Expressiveness measures the extent to which the change process communicates innovation and creativity.

6. (c) New to the world or new to the market services

New to the world or new to the market services is a radical service innovation.

7. (b) Service line extensions

Service line extensions is the form in which incremental innovation happens.

8. (d) Augmentations of the existing service line such as adding new menu items**

Augmentations of the existing service line such as adding new menu items is not a technological innovation.

9. (e) Incremental innovation

Incremental innovation is use of ATM-like kiosks to distribute boarding passes to passengers.

10. (b) Radical innovation

Radical innovation is exemplified by Netflix and Apple.

Unit 9

Services Process Design

Structure

"When you have two coffee shops right next to each other, and each sells the exact same coffee at the exact same price, service design is what makes you walk into one and not the other."

- Marc Stickdorn

9.1 Introduction

While designing a new service process, the designer should focus on overall customer experience since that is what distinguishes the service being designed.

In the previous unit, we discussed the topic, 'Innovation and Service development'. The concepts covered included innovation and creativity, culture of innovation, linking improvements to customer needs, drivers of innovation and commercial convergence. In this unit, we will discuss services process design and the associated concepts.

Service Organizations have evolved from a one-man firm, serving a set of customers directly, to an organized business entity serving a large number and a variety of customers. A simple example would be a doctor serving a

community for general ailments, 50 years back to the same doctor establishing a 100-bed hospital in the same community to provide treatment to a wide variety of health problems. Obviously, the doctor cannot handle the situation as he practiced 50 years ago. He has now an army of doctors, nurses, attenders, front office, pathologists, lab technicians, etc. who are part of the team assisting him in the treatment of patients. He is also having more sophisticated equipment for diagnostics and treatment now. The way the service is given has changed and oriented towards specialties like cardiology or diabetes etc. The doctor has grown from a small "doctor-cum-compounder" state to the present state gradually by trial and error. With the dramatic developments in all facets of the service sector, it is realized that trial and error approach will not result in business success as competition is stiff and service providers do not have time for it. In this unit, we will discuss some of the approaches to designing the service processes in a more scientific manner. We will also see how Information technology and Statistical tools will help us design service processes better.

In this unit we will discuss 'Services Process Design', in detail. The concepts covered include new Service Development Process, Service Concept & Design, Service Design, Service Blue Printing and Utility Models, Technology as Enabler in Design and Simulation as a Tool for Services: Forecasting Demand for Services

9.2 Objectives

By the end of the unit, you will be able

- Identify the steps in a new service development process
- Explain the two main types of new service development.
- Interpret service blueprinting & utility models
- Incorporate customer value in the service design
- Identify quantitative techniques used for service design
- Explain simulation and process improvement techniques.

9.3 New Service Development Process

A new service is defined as a service that does not exist for offering to the customer. It may be an existing service product with minor changes implemented to meet customer expectations, competition or technological developments. It may also be a game changer, treading new trends in offering better services to customers at reasonable prices. Let us look at a few examples:

- A restaurant, starts serving drinking water as per customer choices of cold water, warm water, etc.

- A regular taxi driver giving you a bill for the travel instead of your checking the meter before payment
- A budget airline serving light snacks and water free on-board anew.
- A changed delivery process like a token system in a bank instead of a queue system
- New concepts like ride-sharing by OLA or Uber cabs
- Amazon.com or e-bay or the realty web sites like magicbricks.com or commonfloor.com

These services did not exist before and are the results of innovation processes.

While the new systems developed by minor/incremental changes do not need a large capital outlay, they will certainly involve redefining operational steps like production, procurement, storage, delivery, pre and post-delivery encounters, etc. However, all such improvements come under incremental changes to the existing products and services?

Innovations: Typically, innovations involve radically changed product or service offerings taking advantage of the technology developments. They constitute destructive innovation.

For instance, mobile apps and every application can be viewed as an attempt to satisfy an existing need in a very new method, relying on the newest technology available.

OLA and Uber cabs offer travel services by suitable mobile apps.

Bharat Matrimony is an innovation in terms of the idea and use of technology.

Technological developments are the main drivers for innovations.

Phases of service innovation processes: Dr. Ing. Wolfgang Maass of Saarland University, Germany has recommended the following five phases for new service development:

- **Generation of ideas:** Ideas from internal & external sources are collected, assessed and prioritized.
- **Design:** New services are designed based on the ideas generated to suit the market needs.
- **The implementation plan:** Made and tested
- **Testing:** Monitoring performance, analyzing feedback and taking corrective actions
- **Recommend:** Full launch after completing corrective modifications, communicate to the marketing personnel and other stakeholders.

Table 9.1 shows the differences between innovation and incremental changes.

Table 9.1: Differences between Innovation and Incremental Changes

Factor	Innovation	Incremental change
Product	Totally new product.	Existing product. Marginally changed to suit customer needs, technology, competition.
Capital investment	High investment may be Required	No new investment. Only some revenue expenditure required.
Risk of success	High	Low
Skill required	Totally new	Some training would do.

Source: ICFAI Research Center

Design processes

The design process involves the following steps:

- **Design the new service/product**: Formulation of objectives, deciding on business strategy, idea generation, screening the ideas generated for implementability, concept development, and testing.
- **Analysis**: Business analysis, PESTEL and SWOT analysis, Cost-benefit or IRR analysis.
- **Development:** Service design and testing, delivery process design, testing with simulated conditions, recruitment and training of personnel, sample production, troubleshooting, pilot run, test marketing, feedback analysis, product/process improvements, mistake proofing, etc.
- **Full launch**: Planning the launch, promotional campaigns if needed, selecting location/market to launch the service product, actual launch, collection of feedback and analysis, etc.

Example: CASHe, a Mumbai-Based Fintech Platform, Launches an Innovative Industry First Instant Credit Line Service on WhatsApp

CASHe was a fintech company based at Mumbai. The company launched a very innovative instant credit services on WhatsApp by name "industry first". The new service gave loans to clients in 30 seconds on WhatsApp. The service was based on AI based chat technology available on WhatsApp. The company was combing two existing services viz WhatsApp and instant credit lines. The applicant had to just enter his name. No other data need to be entered. No documents need to be submitted.

Contd….

The full application was generated automatically. Even KYC was taken care by the app. After verification, the credit lines were set up in few clicks.

Source: https://www.newsbytesapp.com/news/business/cashe-launches-instant-credit-line-on-whatsapp/story, dated June 16, 2022. Accessed on 16/06/2022

9.4 Service Concept & Design

Many components of a service product are not physical entities. Service product itself is a combination of some physical features and a whole lot of people skills, emotional presentations, encounters, feelings, etc.

Let us take the example of a hospital service: the testing and diagnostic service - The chairs and ambiance are the physical aspects. The way the doctor interacts with the patients and the way a patient is serviced by the front office personnel or lab technicians are the non-physical components of the service offered by the hospital. Hence, both the physical and non-physical aspects have to be properly integrated to provide required treatment to patients. The challenge is to ensure that the decisions from ideation to delivery stage are consistent with the goals and target customers. Service products are often a single package and the customer is not worried about how well you integrate the physical and non-physical aspects.

9.4.1 Definition of Service Concept

The following are some definitions of Service Concept.

- "The way in which the organization would like to have its services perceived by its customers, employees, shareholders, and lenders" –Heskett (1986)
- "Detailed description of WHAT is to be done for the customer and HOW this is to be achieved" – Edvardson & Olsson (1996).

Designers of service products and managers of service organizations must establish a "shared vision" or "super-ordinate goals" across the organization and spell out the "what" and "how" aspects well before starting the design process.

A service concept has to be written down and agreed by all stakeholders like designers, developers, production, marketing, delivery, and after-sales service before the design process is started.

Example: Tata Motors introduced a new "service concept" named EzServe to bring an innovative doorstep service to its customers

Tata Motors introduced a new "service concept" named EzServe. This was basically very innovative service concept to provide a more convenient service option for its vehicle owners who were stuck on a highway or some other place.

Contd….

An authorised senior technician (with an ID card) came to the site on a two-wheeler fitted with all that was required to take up most of the service problems. The kit on the two-wheeler consisted of 3 utility boxes containing a vacuum cleaner, spare parts, a jack & jack stand, and other hand tools. EzServe addressed basic service, quick repairs. It provided annual maintenance schemes at a very low cost to the customers to enhance retention.

Source: https://www.rushlane.com/tata-motors-ezserve-car-service-at-doorstep-12432668.html, dated April 13, 2022. Accessed on 16/06/2022

9.5 Service Design

We can start designing the service processes and delivery systems once the service concept is clear and the operating strategy has been finalized. Care must be taken to ensure that every step and every detail, big or small, is identified and documented. A school of thought divides the steps into a) structural design elements and b) managerial design elements (Fitz Simmons & Fitz Simmons—2011).

Structural design elements include:

a) **Delivery system:** Process structure, service blueprint, and the strategic positioning desired.

b) **Facility design:** building, equipment needed, layout of the front office and the back-office facilities, etc.

c) **Location:** geographical location - near market or near resources? Can front office and back office be at the same place or at different locations? Cost Vs benefit considerations.

d) **Capacity planning and scheduling:** simulations, queuing models, ERP software, projected customer base at different time points Vs facilities and resources, etc.

Managerial design elements include:

a) **Information:** Technology planned, speed of network needed Vs available, scalability, integration of information generated at different locations like customer, vendor, production, etc.

b) **Quality:** How to measure quality, metrics, how to communicate and monitor recovery systems for possible failure situations, Poka-Yoke or mistake-proofing.

c) **Service encounter:** Culture required for the required quality of the encounter, out-sourcing possibilities and its impact on the encounter quality and implications for business.

d) Capacity management, demand management, automation/ expansion/ modernization, yield management, productivity, and cost aspects.

The factors to be considered in designing a service product and service delivery process would depend on the service concept and service strategy. The extent of personal contact, level of standardization and technology/automation which depend on the service concept and strategy would impact the decisions regarding location, layout, quality considerations and efficiency issues of the service.

For example, let us consider the case of a travel agent who books tickets for a train journey, bus travel or flights from one place to another. The location of most of these offices would be closer to the railway stations as generally, people prefer the train journey as the first option. If train tickets are not available for the date and train chosen, the agent offers bus tickets by ordinary, deluxe, air-conditioned or Volvo AC buses and sometimes offers flight tickets too. The personal interaction with the customer is high and normal internet would do for the service.

Locating the office near the railway station ensures the flow of customers and business generally depends on earlier experience of customers with the travel agents. As opposed to this, the travel websites like IRCTC or Travelyari.com who specialize in train travel or makemytrip.com specializing in air-tickets do not need to be located near the airports. They can operate from anywhere and the face to face contact is non-existent. The service is as per a standard menu and standard procedure unlike the case of our travel agent where the service product is customized.

Approaches in Service design: There are 4 important approaches followed in service design. The approach followed would obviously depend on the service concept, type of product, extent of standardization, extent of personal contact, and the service strategy.

- **Production line or assembly line approach:** This is suitable where the product is standardized and offered in a menu-based pattern like a fast-food joint where we can order a dosa, vada, coffee, pizza or burger across the counter and take it for consumption at the tables or take-away for consumption elsewhere.
- **Customer as co-producer:** "Make yourself" service like IKEA products that are assembled at home by the customer. Here a portion of the labor cost is avoided as the customer does the assembly based on standard design and components.
- **Customer contact approach:** Here we isolate low contact places like the back office from the high contact ones.
- **Information empowerment through web and IT:** Online bill payments where the customer is guided to make payments through the internet or guided printing of boarding passes in airports can be examples here.

Example: U.S. Bancorp Investments (USBI) Revamped its Robo-Advisor for Investments Based on Extensive Research and Co Creation with Customers

U.S Bankcorp investments had a robo advisor which took care of the time-taking and complex steps related to customer investments. The steps automated were research, buy/sell/monitor. The advisor was revamped based on very elaborate research and involving customers as Co-producers. The improvements were a result of the bank researchers and customers working closely in the "digital experience lab" of the company.

Source: https://ir.usbank.com/news-releases/news-release-details/us-bancorp-investments-launches-new-improved-automated-investor, 02-November-2021. Accessed on 16/06/2022

9.6 Service Blueprinting and Utility Models

Service blueprinting allows a company to examine and explore the relevant issues in creating, designing, and managing a service. It maps all customer processes, interactions, and possible results in every step of the service encounter. The service blueprinting is based on the process-flow diagram and it enables visualizing and segregating the front office or high-customer contact processes and low-contact back-office processes. We can identify the activities that can be done away from the customer's visibility and establish suitable systems to do them better. This analysis also paves way for finding new methods of service that reduce customer contact through the identification of service processes that can be made to need minimum contact. An example can be the banks installing machines for updating passbooks without the intervention of the clerk and thus saving the waiting time for the customer in a bank. This tool helps in finding ways and means to do the high-contact activities also better by specifying the sequence and standard timings for each activity and continuous monitoring of execution times and by the installation of POKA-YOKE or mistake-proofing steps for flaw-less service.

Let us consider the sequence of activities in a restaurant shown in Table 9.2.

Table 9.2: Sequence of Activities in a Restaurant

Customer Contact (Front Office)	Away from the Customer's View (Back Office)
• Receive customer with a glass of water	• Communicate orders for food to 'supplies section'
• Note down orders	• Inform kitchen for making
• Serve food and add-ons like chutney	• Receive from kitchen and pass on to servers

Contd….

• Present bill, collect money	• Prepare bill and send to server
• Take bill for payment	• Back office to update sales and stocks
• Receive balance cash	
• Present cash and bill to customer—receive tips	
• See off customer with thanks	

Source: ICFAI Research Centre

The above blueprinting effort does not have details of standard service times and cycle times for all the processes but gives a view of the segregation of high and low contact activities.

Customer utility models

Every service product has attributes that are linked to the cost of purchase or price as well as non-price attributes like feelings, emotions and perceptions. Customers 'perceive' utility of the service based on both price-related and non-price attributes. The customers prefer one hospital instead of another based on the cost of treatment as well as factors like reputation, specialty and their experiences in the past. Utility models are based on this concept as perceived by the customer.

These models enable optimization of design specifications of price and non-price attributes to be considered to meet the service concept and goals.

The designers must interact with the front-office people to understand the level of non-price attributes expected by customers and the relative importance of each attribute to different segments.

Reliability, responsiveness, assurance and empathy are the first four aspects, the customers expect from a service provider and these are the most important components of service quality. The tangible aspects of quality come after the first four intangibles.

The relative rankings of the first 4 intangibles have to be weighed against the cost of introducing/improving them.

Step-1 of customer utility models is to identify important attributes of service and relevant costs.

Step-2 is to specify levels for each attribute and,

Step-3 is to create a pilot design. The next step is to offer the product to customers and measure responses and feedback. A model is finalized only after the feedback, rectification, retest, and improvement cycle is completed.

Example: Ergeon, San Francisco based Start-Up Designs a Service Blueprint that Enables Customers to Order Construction Projects Like Fences the Same Way They Order Other Products and Services Online

Ergeon was a start-up company based out of San Francisco. It designed a new service blueprint that enabled anyone to order construction projects like fences, driveways much like any product or service online. The company located a niche service area for customers who wanted to get small home improvements without much hassle at affordable cost and at the same time providing small contractors in terms of getting business and also taking away all front office and back-office headaches which they cannot manage to grow their business. The customer told his requirements to Ergeon professionals, and the company set up contact with the contractor and gave a quote and stood guarantee for the quality, completion and post contract guarantees.

Source: https://techcrunch.com/2022/06/07/ergeon-series-b/ Accessed on 17/06/2022

Activity 9.1

The factors to be considered in designing a service product and service delivery process would depend on the service concept and service strategy. We can start designing the service processes and delivery systems once the service concept is clear and the operating strategy has been finalized. Care must be taken to ensure that every step and every detail, big or small, is identified and documented.

You are required to first identify different schools of thought in identifying service design elements.

- Select one of them for designing a service facility for an Ice cream parlour.
- Identify the factors to be considered for the identified task.

Check Your Progress - 1

1. Which of the following represents destructive innovation?
    a. Using Artificial Intelligence to replace workers in the shop floor
    b. Low-cost airlines offering drinking water to passengers
    c. Satabdi Trains offering breakfast to customers
    d. Mobile phone having tracking facility
    e. Refrigerators having built-in inverters

2. Which of the following is NOT a feature of an Innovation?
    a. Innovation is totally new product or service that does not exist in the market
    b. Innovation might require high capital expenditure
    c. Innovation may require more people for maintaining it
    d. Innovation involves high-risk investment
    e. Innovation may be technology-driven
3. Which of the following is not a part of service design process?
    a. Facility location
    b. Parking facility
    c. Ease of customer contact
    d. Forecasting demand for services
    e. Self-service facility
4. Which of the following is not a structural design element?
    a. Delivery system
    b. Facility design
    c. Capacity planning
    d. Service encounter
    e. Location selection
5. Which of the following is NOT a managerial design element?
    a. Information
    b. Service quality
    c. Delivery system
    d. Service encounter
    e. Demand management

9.7 Technology as an Enabler in Design

Following two significant developments in the last few decades have greatly impacted the image of service designers and in fact, changed the concept of service design. Development of networked media technologies, the arrangement of physical and software interfaces to distributed devises, cloud computing and shared storage devices, internet, mobile applications, and mobile technology per se, and web-enabled services have all impacted the design processes and the delivery systems for services. Tracking systems for logistics and supply chain services companies depend heavily on these developments. GPS technology is an integral part of Apps-based cab services like UBER, OLA CABS or Meru as well as for logistic services like DHL, Professional, FEDEX and others.

Second important development is the creation of innovative products and services where design has moved from a specialist function to an important function having considerable influence on production, delivery, and customer service functions as well.

Present-day designers depend on the changing and developing technological field in idea generation, model building, prototype, testing, corrections, and re-launching a service product. The designers are expected to have a holistic view of all connected processes to design a holistic service product. For example, if one has to design banking services, the designer has to consider what are the various services desired by the customers, what is the normal service time for each of these services like checking balances, cash withdrawal, cash deposits, updating passbooks, issuing banker's cheque or DD, loan products, etc. The designer also should have some idea about the arrival pattern and queue formation. Then the designer can think of improving service time and reducing queue lengths by application of appropriate technology like automation, on-line transactions, passbook up-dating machines, etc.

To understand the queue system, the designer may have to simulate situations using technology-aided simulation systems and software. SCM and logistic service designers have to update knowledge of software available, bar coding, GPS-enabled tracking technology, etc. before they start the design process so that the most important aspects of SCM services like delivery accuracy, response to queries, reliability, pilferage, and damage control, etc. are taken care of.

Example: GE Healthcare Develops Control Software for 27% Reduction in Operating Room Costs

GE Healthcare got FDA approval for a new software-based process for delivery accuracy and reduction in wastage of anaesthetic agents. The delivery of anaesthesia was partially automated by the software. The doctors set targets for oxygen and anaesthetic agent. The software ensured the set targets were achieved quickly and then maintained. The accuracy of anaesthesia delivery was enhanced by the software and the workflow was simplified while reducing drug waste, lowering the cost of care and greenhouse gas emissions.

Source: https://www.businesswire.com/news/home/20220404005215/en/GE-Healthcare-Receives-FDA-Approval-of-First-Ever-Software-to-Help-Automate-Anesthesia-Delivery-and-Reduce-Greenhouse-Gas-Emissions-During-Surgery Accessed on 17/06/2022

9.8 Simulation as a Tool for Services: Forecasting Demand for Services

Forecasting the expected sales in the future period is an important requirement of planning resources and facilities for any enterprise. For an enterprise that is already in existence, the need to forecast future status will arise when they plan

expansion or modernization of capacity, which are capital-intensive. Even for expanding the market to new areas, management must have some idea about the demand expected with a certain degree of accuracy as otherwise they might incur losses when the decisions do not pay-off. We will learn some methods used by management to forecast demands.

Qualitative/Judgmental Methods: Commonly used judgmental methods of forecasting are:

- **Unaided judgment:** Unaided judgment involves asking an expert to make a prediction about the demand. This is not a reliable method as it is more like the panel discussions on TV where different people talk on some topic about which they have limited knowledge.
- **Predictive markets:** Predictive markets are like gallop polls or exit polls and betting market software.
- **Delphi:** The Delphi technique was developed by Rand Corporation. This involves referring a problem to a panel of experts and trying to get reasonably accurate prediction by an iterative process. Managers who use this method generally get a median score. This is better than unaided judgment and predictive markets.
- **Structured analogies:** Structured analogy is a method where a team of experts discusses a situation, which is similar to the situation on hand, problems faced earlier in the analogy and solutions found. They try to fit the same solutions in the current problem.
- **Judgmental decomposition:** This may be faster than Delphi, but very subjective in approach
- **Judgmental bootstrapping:** The Judgmental decomposition method involves breaking down the problem into sub-groups, forecast for sub-groups, and then combining all parts. For example, if a hospital wants to predict occupancy for a future period, this is divided into general ward, special ward, ICU, lab business, emergency, Operation Theater, etc. and predictions are made about the businesses for these facilities based on demographic factors and then aggregated
- **Expert systems:** Judgmental bootstrapping follows the same method but the manager converts data into a set of regression equations between forecast and information used. This is better than pure judgmental decomposition as it allows for testing for changes in some variables.
- **Simulated interactions:** Expert systems are a structured presentation of the different rules used to forecast. The method uses computer-aided computations and is very expensive to build and use.

- **Focus groups:** The Focus groups method involves surveying a group of customers who are used for this purpose. The method is widely used for testing new products like cell phone Apps.
- **Conjoint analysis:** To understand the queue system, the designer may have to simulate situations using technology-aided simulation systems and software. SCM and logistic service designers have to update knowledge of software available, bar coding, GPS-enabled tracking technology, etc. before they start the design process so that the most important aspects of SCM services like delivery accuracy, response to queries, reliability, pilferage, and damage control, etc. are taken care of.

Conjoint analysis is used to analyze the relationship between customer preferences of paired features against the total product features. This is also used for product testing and redesigning in all service industries to understand the relative importance assigned by customers to product features.

Analytical / Quantitative Methods of Forecasting:

There are a few methods under this category. They are Exponential smoothing, Neural Networks, Causal models and Simulation. They are briefly detailed below against each method.

a) **Extrapolation of the Present Trend for a Future Period**: Exponential smoothing method is the common method here. The practice is to remove the seasonal variations from the data first, forecast demand using exponential smoothing and then re-introduce seasonality into the predictions. This is based on time series data, which is historical and this assumes that things will not change drastically due to factors like international effects and technology conditions.

b) **Neural Networks**: This method is computer-intensive and requires a lot of data. This is an expensive method.

c) **Causal Models**: This method uses multiple regressions to make predictions. This is useful when the causal relationships are known together with the direction of relationships (+ve or –ve).

d) **Simulation**: Simulation involves creating a situation based on certain assumptions about that situation. For example, we see rain scenes in movies and we know that the scene was not shot during rain. What happens is the director of the movie creates a rain situation using the formula of water pouring down, high winds, dust and leaves flying and lightning. Similarly, businesses can predict a market situation by simulation using price, demand, competition promotion, etc. Normal predictive models using deterministic approaches involve creating relationships like,

Sales t = α* quantity* price at t+ β* Sq. root of competition price- μ* competition pro Motion cost + k

While building a model, care should be taken to identify endogenous variables (i.e. Variables from 'within' like another cheaper alternative) and exogenous variables (external factors).

The model builder must know that some variables could have non-linear relationships with the variable being predicted.

Example: Hamad Medical Corporation Uses Simulation Technique Evaluate Interventions

SMC (Staff Medical Council) was a department within the Hamad Medical Corporation (Qatar's main healthcare provider). The department was responsible for the healthcare needs of its own staff. The department could cater to only 75 percent of the demand for its services. This resulted in overcrowding, poor service levels, dissatisfaction of the patients and over worked healthcare professionals. The hospital used a simulation model for arriving at various scenarios (related to patient service) and arrived at solutions for the challenges. The model had all the steps in the patient journey in the department. Also the locations of the staff and the locations of the existing hospitals (close to the staff location) were part of the model. The objective was to redistribute the staff to the three satellite hospitals where most of the patients came.

Source: https://www.cureus.com/articles/98782-redistribution-of-doctors-and-decentralization-of-clinics-improved-utilization-of-services-demand-and-capacity-of-hamad-medical-corporations-staff-clinic, dated June 12, 2022. Accessed on 17/06/2022

Activity 9.2

Following developments have impacted the design processes and the delivery systems for services.

- Development of networked media technologies
- Arrangement of physical and software interfaces to distributed devises
- Cloud computing and shared storage devices
- Internet, mobile applications, mobile technology
- Web-enabled services

You are required to select ride-hiring service offered by operators like Ola, Uber etc. and identify the service design they have resorted to using technology.

Specifically address the tracking system and payment system employed by them.

Check Your Progress - 2

6. Which of the following is not a qualitative method of forecasting?
   a. Unaided judgment
   b. Predictive markets
   c. Delphi
   d. Structured analogies
   e. Simulation
7. Which of the following is not a quantitative method of demand forecasting?
   a. Delphi technique
   b. Expert systems
   c. Extrapolation
   d. Causal models
   e. Simulation
8. In a movie on Second World War, a famous war scene was shown. Which is the type of technique used?
   a. Simulation
   b. Neural Networks
   c. Focus groups
   d. Delphi technique
   e. Unaided judgement
9. Which of the following is not essential for designing banking services of a branch?
   a. Normal service time for each service item offered
   b. Staff relations
   c. Customer arrival pattern and queue formation
   d. Improvement of service time
   e. Safety of customers and staff
10. When a patient goes to a hospital, at the time of discharge after a few days of hospitalization, payment bill is given providing all the details. Which of the following helped the process?
    a. Initiative of the duty doctor
    b. Support of nursing staff
    c. Effectiveness of public relations
    d. Information and communication system
    e. Simulation

9.9 Summary

- A new service may be an existing service with minor modifications based on customer feedback, changed delivery processes, or a radically different product because of an innovative effort.
- Evaluation of ideas, deciding the place, designing, trial run or experimentation, testing and launching are the steps in the innovation process.
- Unlike minor changes in product/process, an innovation would require high-risk investments though it may bring in radical changes.
- The steps in the design process are designing the new service/product, business analysis or PESTEL/SWOT/IRR analysis, developing the product and processes and final launching.
- Service concept and service strategy impact the design and the service/product would succeed only when the service concept is understood by all.
- Service design elements are grouped as structural and managerial elements for a better understanding of the requirements.
- The Design approach maybe a production line approach, customer-shared process approach or customer contact based approach.
- IT and technology are major enablers of design in today's world. Service blueprinting helps in visualizing and mapping all relevant facts & factors required for designing a service.
- Utility models help us to understand the relative importance of price and non-price attributes for different segments of customers.
- There are many qualitative and quantitative methods of demand forecasting used by businesses.
- The reliability of qualitative methods depends on the expertise of the forecasting team.
- Deterministic quantitative methods give unique numbers as forecasts and calculation of risk involved in using the predictions for demands could be difficult.

9.10 Glossary

DD: Demand Draft

IRCTC: Indian Railways Catering & Tourism Corporation

IRR: Internal Rate of Return-- a method to check the financial viability of a project.

PESTEL: Political, Economic, Social, Technological, Environmental, & Legal situations analysis - a method of environmental scanning.

POKA-YOKE: A Japanese technique to take pro-active steps to avoid mistakes.

SCM: Supply Chain Management

SWOT: Strengths, Weaknesses, Opportunities and Threats analysis.

9.11 Self-Assessment Test

1. What are the main differences between a marginal change in product and innovation? What are the steps in Service innovation?
2. How does Service Concept impact designing a service and processes?
3. Discuss the various approaches in service design.
4. What do you understand about Service Blueprinting? Explain with suitable example.
5. Discuss the qualitative and quantitative approaches in forecasting.

9.12 Suggested Readings / Reference Material

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4. Mathur S. S., S Mathur and Kenyon A. (2017), Creating Value: Successful Business Strategies, Routledge, 2nd edition.
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9.13 Answers to Check Your Progress Questions

1. (a) Using Artificial Intelligence to replace workers in the shop floor

Using Artificial Intelligence to replace workers in the shop floor is a destructive innovation.

2. (c) Innovation may require more people for maintaining it

Innovation may require more people for maintaining it- this is not a feature of innovation

3. (d) Forecasting demand for services

Forecasting demand is not a part of service design process

4. (d) Service encounter

Service encounter is not a structural design element

5. (c) Delivery system

Delivery system is not a managerial design element.

6. (e) Simulation

Simulation is not a qualitative method of demand forecasting for services.

7. (a) Delphi technique

Delphi technique is not a quantitative method of demand forecasting

8. (a) Simulation

Simulation is the technique used in a war scene in a movie

9. (b) Staff relations

Staff relations is not essential for designing a banking services of a branch

10. (d) Information and communication system

Information and communication system in a hospital is responsible for tracking and billing the patient meticulously.

Unit 10

Designing a Service Delivery System

Structure

"We have to design a health delivery system by actually talking to people and asking, 'What would make this service better for you?' As soon as you start asking, you get a flood of answers."

- Paul Farmer

10.1 Introduction

The most useful inputs for designing a service delivery can only come from the end users.

In the previous unit, we discussed services process design. The concepts covered include New Service Development Process, Service Concept & Design, Service Design, Service Blue Printing and Utility Models, Technology as Enabler in Design and Simulation as a Tool for Services: Forecasting Demand for Services.

Designing a service product is the most important step in service industry operations. However, if the product is not produced as per design or delivered in a way that the customer accepts it, the operation does not meet its intended result namely customer satisfaction and loyalty. In service industries, loyalty is very important as repeat customers will also bring in new customers and customer

opinion about the service provider can make or mar the business with more intensity than in the case of a physical product. Quality is a perception in the case of services unlike the physical specifications and characteristics of a physical product.

In this unit, we will understand the concept of customer value and how the delivery system has to be designed to increase customer value perceptions. We will also study some quantitative techniques like Queuing and Monte Carlo Simulation, which help us allocate the resources that will ensure the proper delivery of services and improve customer perceived value.

10.2 Objectives

After going through this unit, you should be able to

- Explain the concept of Customer Value.
- Identify a few quantitative techniques useful in service delivery design
- Explain Queuing theory and waiting line situations in services
- Exemplify waiting line in actual practice.
- Interpret the Monte Carlo Simulation Technique
- Establish the service delivery strategy of the Patelco Credit Union.

10.3 Customer Value

Finance managers define cost and price and say that cost is a fact and price is a policy. Managers hold on to this definition and lose sight of a more important aspect of the business, viz. Value. Value analysis defines 3 different types of value of a product----- functional value, cost value, and esteem value. There are schools of thought that include the cost of replacement also as a value. The functional value is to see whether the product bought at a price can perform an intended function. The majority of customers go for a ‘decently priced’ product that can perform the function like someone buying a ball pen for Rs.5 with the feeling that a pen has to write and nothing more. Someone else could buy a pen for Rs.10 saying that this pen is better as it writes smoothly in comparison. These are people who feel that they have got ‘value for money’ and are satisfied. There are others who buy a gold plated, diamond studded pen for Rs. 5000/- to 10000/- and these people want to stand out as someone special. This price is paid for the thrill and perceived differentiation from the ‘crowd’ and is called the esteem value. Another example could be the difference between an ordinary car, say Maruthi 800 and Rolls Royce. Clearly, buyers of Rolls Royce buy it for the ‘esteem value’ rather than functional value, namely, travel.

While cost and price are expressed in quantitative terms, value continues to be a perception, whether we are talking about products or services.

"In every buying decision, a consumer asks the same question: "is what I am going to receive worth what I have to give up in order getting it?". The gain the consumer receives for the benefit is weighed against the cost the consumer must pay to acquire the benefit. The value the individual consumer places on a product or service becomes the customer value for that offering" — John McLaughlin.

The above definition aptly explains the concept of customer value. In the case of services, the customer value is a compound of price, quality, customer service, ambiance and the quality of service encounter. We will notice that a major portion of these components is subjective in nature. Hence the perception of customer value is different from customer to customer----one customer may feel he received great value while another may not be satisfied with the same service and service provider.

The above definition is sometimes expressed as an equation:

Customer Value = Benefits - Cost.

The question is how do we measure the Benefits?

The highest and best quality of service need not mean high customer value for all as there is always the Cost Vs Benefit comparison and some customers may not feel that the higher cost is worth the additional benefit. There are three ways to deliver customer value.

a) Provide the customer with the best cost
b) Provide the customer with the best product
c) Provide the customer with the best service

The challenge is not what values to create or what the benefits would be but steps to operationalize customer-facing processes to deliver value. Value is created at every stage of the process flow and hic-up at any level destroys the value perceived altogether. As we have already seen earlier, service recovery is a painful process.

Example: Alaska Airlines Introduces Subscription Based Service Adding "Customer Value"

Alaska Airlines introduced one of the most sophisticated subscription based services in order to build life long "customer value" rather than see each sale as one off transaction. The subscription service was designed after talking to customers in California who confirmed that most of them travel more frequently in California state. The plan had options for 6, 12 or 24 trips in a year. The airline was assured of customer orders and thus save on marketing costs whereas the customer saved close to 30% on annual expenditure. This was a great example of creating use "customer value" in the process design.

Source: https://skift.com/2022/02/16/alaska-airlines-debuts-subscription-model-for-flights/ Accessed on 17/06/2022

10.4 Quantitative Tools for Designing Delivery

Traditional service industries have evolved the delivery processes by trial and error and may not be sure that the processes are delivering optimum levels of customer value. Decisions made by trial and error and based on 'gut-feel' or 'hunch & belief' do not enable a scientific analysis of failure situations and hence hinder improvement and development.

Quantitative techniques for decision making, on the other hand, employ measurable data to reach comparable and useful results and also enable evaluation of alternative plans to achieve the objectives. Statistical methods assist in planning data collection, compilation, analysis, and interpretation with possibilities of risk analysis before actual implementation.

We are now in a complex business environment with stiff competition and complex information needs and time available for taking decisions is shrinking. Quantitative methods assisted by IT enable faster and more accurate decisions with all analyses of risks and ranges of variables that can withstand a decision. Quantitative decision-making models force managers to—

- Be explicit about the objectives
- Identify the decision variables that would influence the objectives
- Locate, measure and record all relevant relationships and inter-connections between the decisions, and
- Identify relevant constraints and slacks on the decision variables.

We will examine the following techniques and tools frequently of use in service industries in the subsequent paragraphs:

- Linear Programming & Transportation problems
- Waiting Line & Queuing problems
- Monte Carlo Simulation method.

10.5 Linear Programming and Transportation Problems

Let us consider the case of a restaurant, ABC restaurant. The restaurant serves middle-class clients who visit the hotel for breakfast, lunch, and dinner requirements. Typically, the number of customers who come to ABC restaurant is of the following nature: shown in Exhibit 10.1.

Exhibit 10.1: Customer Footfalls in ABC Restaurant

Time	Customers	Servers required	Cleaners required
6-7 am	60	3	1
7-8 am	120	6	2
8-9 am	150	8	3

Contd….

9-10 am	80	5	2
10-11 am	30	2	1
11-12 pm	50	3	2
12-1 pm	100	6	3
1 – 2 pm	170	10	4
2 - 4 pm	30	1	1
4 - 6 pm	50	2	1
6 – 8 pm	200	5	2
8 – 10 pm	150	4	2

Source: ICFAI Research Center

A full-time server costs Rs.1000 for 8 hours duty and a part-time server would cost Rs.700 for 8 hours duty. A full-time cleaner would cost Rs.500 for 8 hours and a part-time cleaner would cost Rs. 350 for 8 hours.

The owner has to decide how many full-time and part-time workers he should have subject to local government regulation that says at least 60% of employees should be on the full-time payroll.

The dilemma is if he keeps 10 servers, the maximum, he will spend Rs.10000/- per day and if he keeps 6 (60% of 10) on a full-time basis he will still have a wage bill of Rs.6000/- plus part-timers wage when the requirement is more than 6. He has to manage the idle workers when the requirement is below 4 or 5. On the other hand, if he goes by the average requirement during the day, say 4, then he might lose customers as service with fewer people than required causes delays and customers do not like to wait.

This is a typical Linear Programming problem that addresses the objective of minimized cost subject to the requirement and other constraints. We express the Objective function and all the resource and marketing constraints in the form of linear (straight line) equations or inequalities ($\leq$ or $\geq$) and solve the problem in an iterative process and reach the optimal solution. Computer software is available to handle the mathematical calculations involved.

The same situation can be seen in the case of a computer center where the number of customers varies during different time points in a day or a software development firm where the number of orders varies in different time points and the developer has the option of out-sourcing for the extra load over normal load.

Transportation problem: Transportation is a special form of linear programming and is useful for logistics and supply chain services. A typical problem will be like the problem given below in Exhibit 10.2.

Following gives, the unit transportation cost from warehouses to different destinations:

Exhibit 10.2: Unit Transportation Costs			
	Dest-1	**Dest-2**	**Dest-3**
WH-1	10	6	8
WH-2	5	11	7
WH-3	4	9	12
WH-4	7	8	5

Source: ICFAI Research Center

Demand 70 50 80

Capacity: WH-1 = 60, WH-2 = 50, WH-3 = 70, WH-4 = 20. The condition is all the warehouse stocks have to be distributed and all the demands are to be satisfied. The main objective is that the total cost of transportation has to be minimized subject to demand and capacity constraints. Transportation methodology has many approaches to get a feasible solution--- the least cost approach, North-west corner or Vogel's approximation approach—and the optimal solution is reached by what is known as Modified Distribution (MODI) method. Here also software help is available for larger problems.

Example: Design of a new computer modelling tool to improve the distribution of a type of patient-specific immunotherapy treatment

Researchers from the Department of Chemical Engineering at Imperial College London designed a new computer modelling (Integer Programming) tool to improve the distribution of a type of patient-specific immunotherapy treatment. Researchers at Imperial college wanted to optimize the delivery of the immunotherapy treatment to critical cancer patients who need periodic and also emergency treatment. The current model of the supply chain was the hospital placing an order with the manufacturer and manufacturer directly supplying it to the hospital. The need and convenience of the critical cancer patients was not a factor in this model. The researchers used an integer programming model after talking to the patients and understanding their issues. The computer model used real world information on cell therapy supply chains and proposes candidate solutions to reduce costs and minimise the turnaround time of the therapy. The intervention suggested by way of additional storage in the network could lead to improved scheduling and coordination of the manufacturing facilities.

Source: https://www.imperial.ac.uk/news/233295/computer-modelling-tool-optimise-personalised-medicine/ dated 24th January, 2022. Accessed on 17/06/2022

Activity 10.1

The gain the consumer receives for the benefit is weighed against the cost the consumer must pay to acquire the benefit. The value the individual consumer places on a product or service becomes the customer value for that offering. The highest and best quality of service need not mean high customer value for all as there is always the Cost Vs Benefit comparison and some customers may not feel that the higher cost is worth the additional benefit. The challenge is not what values to create or what the benefits would be but steps to operationalize customer-facing processes to deliver value. Value is created at every stage of the process flow and hic-up at any level destroys the value perceived altogether. As we have already seen earlier, service recovery is a painful process.

You are required to identify how to create maximum value to customers vising a Fast food centre, owned and managed by you.

- Identify ways to deliver customer value
- Examine which way suits your operations better with reasons.

Check Your Progress - 1

1. Which of the following exemplifies Mercedes Benz Salon?
    a. Functional value product
    b. Customer value product
    c. Esteem value product
    d. Cost value product
    e. Quality value product
2. Customer Value is-----
    a. As perceived by the customer
    b. As perceived by the designer of service
    c. As perceived by the front office people
    d. As seen by the competitor
    e. As seen by the Chief Executive

3. Which of the following is not the best way to create customer value?
   a. Provide the customer with the best cost
   b. Provide the customer with the best product
   c. Provide the customer with the best service
   d. Provide the customer with maximum satisfaction
   e. Assure the customer to replace if the product is not good
4. Which of the following is NOT always true of quantitative methods?
   a. Clearly identified decision variables
   b. Statement of objectives in quantitative terms
   c. Easy computations and models
   d. Identified inter-relationships
   e. Identified constraints
5. Which of the following tools is not effective in service industries?
   a. Qualitative methods
   b. Linear Programming
   c. Transportation method
   d. Waiting Line & Queuing problems
   e. Monte Carlo Simulation method

10.6 Waiting Line and Queuing

Customers waiting to receive service is a common phenomenon that we encounter in our day-to-day life. We see queues in front of bank counters, ticketing counters, at restaurants, gas stations, etc. The queue is thus an all-pervading fact of life. For the service provider, the queue is a major problem asking for an immediate solution. Queues cannot be done away with but efforts can be taken to reduce the waiting time of customers and to reduce the length of the waiting line that can cause unpleasant situations. Increasing service points or servers may not be an optimal solution and the manager has to understand the queue systems before arriving at an optimal solution.

Features of a queuing system:

Input source: the size of the source, the attitude of customers, and the distribution of arrival times. Input sources are usually heterogeneous and will be an assembly of several subpopulations like people approaching a hotel maybe those who made advanced booking or walk-ins or visitors of Gym or Cafeteria. In a hospital, the patients may be emergency cases, walk-ins, or people with appointments.

Queue Configuration: Number of queues depending on the layout of the service system.

Queue Discipline: what is the order to service customers? Is it random 'survival of the fittest' rule? Is it first-come-first-served (FCFS) rule? Is it a separate line for each kind of service, like 'those that come for cash, stand in queue-A others in B'? Is it 'last in – first served (LCFS) rule? Do we have separate lines for VIP customers, senior citizens, and mothers with children?

Service Mechanism: Manner of servicing, arrangement of the service facility, distribution of service times, server's behavior, and management policy

Commonly used notations: n = number of customers in the system (waiting+ serviced)

μ = Mean service rate/ average number of customers serviced per unit time.

λ = Mean arrival rate or the number of arrivals per unit time.

P = traffic intensity = λ / μ

The queues may be single-server, unlimited queue or single server-limited queue or multiple server-unlimited queue models. Normally statisticians assume Poisson arrivals and exponential service times, but complicated distributions like Erlangen distribution are used for more complicated problems like port management issues of ships being serviced with minimum turn-around times.

We will see a few simple examples to understand the concept.

A bank has 2 tellers, one handling deposits, and the other handling payments. Service time distribution is exponential for both the tellers with an average of 3 minutes per customer. The arrival rate of customers is Poisson and the average arrival per hour is 16 for deposits and 14 for withdrawal throughout the day. What will be the average waiting time if both the tellers handle deposits and withdrawals?

A railway ticketing office has 3 counters. Customers arrive randomly and there are times when we have a long queue outside the office with many customers waiting to be served and on some days, there is no line at some time points. Each customer can offer only one reservation slip but the slip can contain up to 6 passengers only. There is no separate queue for cancellation or inquiry. The manager has to decide whether he has to increase service counters on peak days or open cancellation counters at some time points only without an increase in the number of counters or automate the booking system with a self-help facility for some types of tickets.

At a certain airport, it takes exactly 5 minutes to land an airplane if the landing signal is available. Incoming planes have scheduled arrival times, but the variability of actual arrivals is probabilistic with a Poisson distribution of 8 per hour mean. This causes stock ups and the runway is not available for long durations and the pilots have to circle around waiting for landing signal.

The pilots and airlines complain as the turn-around is stretched and sometimes connecting flights are lost to passengers. Airport management has to decide building a new run-way which is expensive.

A gas station is selling petrol & diesel besides the lubricants. There are 3 service points with the facility to sell both petrol and diesel. Customers arrive randomly and there are peaks in the morning (7.30 am to 9.30 am) and evening (5.30 pm to 7 pm) when customers crowd at the station. Customers have different service requirements like for Rs500/- or full tank or 25 liters with or without lubricants. Customers can pay with card or cash and some customers use cards for reward points. As a result, the service times are varying. The servers also have varying competence levels. The gas station owner contemplates whether he has to increase service points, break cash and service separately, etc.

These are some of the examples and we can see instances in hospitals where patients wait for nurses or doctors or other services. In effect, these are common situations in service delivery and queuing theory helps us to find optimal solutions.

Example: A Study Conducted at McDonald's Outlet Using Queuing Theory

A study based on Queuing Models was taken up at a McDonald's outlet in Peanag to understand the waiting lines for order placing and collecting the order. The idea was to find what steps to be taken in the service delivery to enhance customer satisfaction. The outlet does not want to lose customers just because it does not have a scientific way to understand the dynamic process. Customer arrival times, serving times and leaving times were recorded for 3 weeks. ARENA simulation software and SPSS (the statistical package) were used to model the scenarios and using simulation, the inferences were drawn.

The results showed that the average waiting time during normal hours was higher than during peak hours. At the collection counters, the waiting time and number of customers queueing increased during peak hours. The simulation study recommended the waiting time and number of customers queueing were reduced by adding one more collection counter.

Source: https://www.europeanproceedings.com/article/10.15405/epsbs.2020.03.03.82 dated 30th March, 2020. Accessed on 17/06/2022

10.7 Inventory Models

Inventory control is a major management function in manufacturing. However, the services are, by definition, are intangible, perishable and cannot be stored for later use. What then is the relevance of inventory management in service operations? The point is though the service cannot be inventoried, some of the items that facilitate the service being rendered can be inventoried. For example,

inventory is the lifeblood of the retailing industry and occupies a substantial portion of the cost of operation. There are differences between the manufacturing inventory and service industry inventory:

a) **Set up/Ordering cost**: In the case of manufacturing, set-up time (tools, machines, and other arrangements relating to starting a new job in a machine) is a deciding factor for inventory decisions. EOQ models talk about the trade-off between ordering cost and inventory carrying cost. In the case of services, set up cost or ordering cost is irrelevant.

b) **Number of products**: In a retail store, the number of Stock keeping units (SKU), are very large and the numbers are larger if you take a book store and the ordering time spent on any one SKU should be short.

c) **Limited shelf space**: allocation of shelf space is very important in retail as the space is limited, the number of items is large and the contribution per square foot or cubic foot is widely varying.

d) **Lost sales Vs back orders**: Back orders are a rare commodity in services. The customer simply moves on to another place where the item/service is available.

e) **Product substitutions**: The stock levels of products in a supermarket should also consider the customer's substitution behavior and keep both the products.

f) **Variability of demand**: The demand for products in a retail store is difficult to predict accurately and is highly variable. An item that moves slowly, in general, may suddenly be in demand and may face stock-out.

g) **Information accuracy**: Normally stock information is arrived by the formula, Opening stock + receipts - sales = closing stock. This may not be true for a retail store as the stock lifted by customers don't come to the cash register and hence not recorded as sales. Theoretically, stock exists in books but not physically. Same is the case of mis-shelfing by customers who take a product from its place and leave it somewhere else. Many retailers attach devices to products, which 'beep' when the item is taken out illegally.

Advanced logistic system based on integrated information systems is helping the retail chains today.

Example: McDonald's Wins Back $2.7 billion in Sales by Introducing Kiosks"

McDonald's wins back $2.7 billion in sales by introducing kiosks with the principle of zero queues and "no lost sales". McDonald's started in-store Kiosks which can be used for self-ordering by customers.

Contd….

This resulted in "zero wait time" in queues and hence those lost sales (due to long queues and people going elsewhere) were avoided. It was estimated that the value could be around $ 2.7 billion winnings in sales. This lost order or sales is like not able to service an order due to non-availability of a product.

Source: *LL Har , Revolution of Retail Industry: From Perspective of Retail 1.0 to 4.0, ScienceDirect, 2022. Accessed on 17/06/22*

10.8 Monte Carlo Simulation

Monte Carlo simulation method uses probability theory and random numbers to forecasting. We need to first set up a probability distribution for the variables to be analyzed. The next step would be to build a cumulative probability for each variable and assign appropriate random number values representing the range of values for each variable. Random numbers are drawn and interpreted as per the range of values assigned. The process is repeated a large number of times to draw meaningful conclusions.

Let us see an example: A Dental hospital schedules its patients for appointments in 30-minute duration. Some patients take less than 30 minutes and some take a longer time. The following summary gives the probability distribution drawn from past data:

Type of Service Probability	**Time**	**Probability**	**Cumulative**
a) Cleaning the teeth	20 minutes	0.20	0.20
b) Extraction	40 minutes	0.15	0.35
c) Check-up	10 minutes	0.20	0.55
d) Root-canal	50 minutes	0.05	0.60
e) Cavity filling	40 minutes	0.35	0.95
f) Beauty-clips	60 minutes	0.05	1.00

We can simulate the arrival of patients for a day's time and arrive at expected waiting time for patients, idle time for the doctor by means of Monte Carlo method.

For example, let us draw a random number. If it is 6542, say, then the first patient has come for service e) cavity filling. Draw another number—say 2850—the patient has come for extraction. These decisions are drawn from the cumulative probability and assuming the numbers to be 0.6542 and 0.2850.

We can get a large sample of patients arriving and can calculate the waiting time (from service times) and idleness of the doctor.

Real-life problems may not be so simple, we may have a number of variables that affect the variable under study and each would follow its own probability distribution. We can use the Monte Carlo simulation with the help of special software available for the purpose.

Monte Carlo simulation helps to understand the likelihood and also the risks with the estimates. The risks are measured with the help of confidence intervals for the estimated values for the dependent variables as well as the independent variable used in the model.

Advantages of simulation:

a) Monte Carlo method is easy to understand even by non-mathematician.

b) Very flexible and there is virtually no limit for analysis.

c) Models are scalable without much trouble and new variables can be added.

d) The deterministic models have to be tractable and the underlying assumptions have to be justified. No such requirements are there for the Monte Carlo method.

If some of the relationships are non-linear, it is difficult to use deterministic models. This problem is not there in Monte Carlo simulation as the random number is defined/ assigned to a variable before we start the draw of random numbers.

Example: A Study at Boston Children's Hospital Heart Center Using Monte Carlo Simulation

A study at Boston Children's Hospital Heart Center using Monte Carlo Simulation facilitated the annual cancellation of surgeries by 57%. The study was conducted using Monte Carlo simulation method at Boston Children's hospital to identify strategies to reduce variation in ICU occupancy and reduce patient surgery cancellation. Data on surgical admissions discharged from the ICU of the hospital were collected to obtain the distribution of length of stay for the simulation study.

It was found that scheduling patients with estimated hospital stays of 1 or 2 days on Monday and Tuesday reduced variation in ICU occupancy and the number of annual surgical cancellations.

Source: https://www.frontiersin.org/articles/10.3389/frhs.2021.787358/full dated 10th February, 2022. Accessed on 17/06/2022

Activity 10.2

Customers waiting to receive service is a common phenomenon that we encounter in our day-to-day life. We see queues in front of bank counters, ticketing counters, at restaurants, gas stations, etc. The queue is thus an

all-pervading fact of life. For the service provider, the queue is a major problem asking for an immediate solution. Queues cannot be done away with but efforts can be taken to reduce the waiting time of customers and to reduce the length of the waiting line that can cause unpleasant situations. You are appointed as the in-charge of all ration shops (about 100) in an assembly constituency • You have to design and implement a queuing system to ensure smooth customer service. • Identify the features of a queuing system before embarking on the design of an effective system.

Check Your Progress -2

6. Which of the following is not a feature of a queuing system?
   a. Input source
   b. Queue configuration
   c. Queue discipline
   d. Service mechanism
   e. Cost of maintenance
7. Which of the following is not a feature of Monte Carlo method?
   a. Easy to understand even to a non-mathematical person
   b. Flexible
   c. Involves complicated calculations
   d. Scalable without trouble
   e. Useful even when the relationships are non-linear
8. Which of this is NOT a queue discipline?
   a. First Come First Serve
   b. Separate queue for VIP
   c. Segregated service
   d. "No service" boards
   e. Last Come First Serve

9. Normally the arrival of customers in a queue follows which of the following distributions?
    a. Normal distribution
    b. Binomial distribution
    c. Poisson distribution
    d. Chi-square distribution
    e. Exponential distribution
10. Which of the following is NOT a characteristic of inventory in a retail store?
    a. Very low ordering time per SKU
    b. Unlimited shelf-space
    c. Large number of products to manage
    d. Loss due to pilferage
    e. Customers' substitution behavior.

10.9 Summary

- The manner in which a well-designed service is delivered to the full satisfaction of the customer decides the fortunes of service organizations.
- The service delivery quality is strongly influenced by the Customer's perception of the value of the service and perceived benefits.
- Quantitative methods of decision making help us to design a good delivery system by enabling evaluation of simulated situations or past data and in assigning relative importance to different value requirements of the customers.
- The service provider has to arrive at an optimal solution in situations with a number of resource and cost constraints and Linear Programming methods help us in this regard.
- Transportation cost minimization is an important objective of logistic companies in particular and all companies in general and the transportation methodology of Operations Research is useful to meet this objective.
- Waiting line is common in the majority of situations and reducing the waiting time of customers and the length of the queue without unduly increasing the cost is possible by application of queuing models appropriate to the situation. Inventory control methods are important in service industries also, as the goods that help in responding to customer needs have to be managed well without adverse impact on working capital.

- Simulation is an attempt to 'create' a situation on paper based on some assumptions about that situation—like a stock out situation when a 'special sale' is announced by a retail store.
- Monte Carlo technique helps us to simulate a situation even when the Statistical distribution of the variables is not known. The service provider can visualize the customer responses by simulating various possible situations that might affect service delivery and tweet the delivery to meet any condition and improve customer perceived value.

10.10 Glossary

EOQ: Economic Order Quantity is the quantity most beneficial from the cost point of view.

FCFS: First Come First Served is a materials management technique where the old material in stock is issued first for use.

LCFS: Last Come First Served is a materials management technique wherein the latest material is served first.

SKU: Stock Keeping Unit is a store or a warehouse where materials are stocked.

WH: Ware House for storage of goods

10.11 Self-Assessment Test

1. What are the advantages of decision-making with Quantitative techniques?
2. Discuss the features of a Queuing system with a suitable example.
3. What is simulation? Explain with suitable example.
4. What are the advantages of Monte Carlo over deterministic models?

10.12 Suggested Readings / Reference Material

1. Chase R. B., Ravi Shankar, Jacobs F. R. (2018), Operations and supply chain management, McGraw Hill, 15th edition.
2. Haskett J. L. (1986), Managing in the service economy, Harvard Business School Press.
3. Nitin Joshi, S. Rajagopalan (2019), Service Operations Management: Towards Excellence, Himalaya Publishing House, 1st edition.
4. Mathur S. S., S Mathur and Kenyon A. (2017), Creating Value: Successful Business Strategies, Routledge, 2nd edition.
5. Robert Johnston, Michael Shulver, Nigel Slack and Graham Clark (2020), Service Operations Management: Improving Service Delivery, Pearson, 5th edition.

10.13 Answers to Check Your Progress Questions

1. (c) Esteem value product

Esteem value. Mercedes Benz is a luxury Salon that is a point of show off for the owner.

2. (a) As perceived by the customer

Customer value is the customer's perception of benefit derived Vis-à-vis price paid.

3. (e) Assure the customer to replace if the product is not good

Assure the customer to replace if the product is not good, is not the best value of creating value to the customer.

4. (c) Easy computations and models

Easy computation is not always possible with all techniques.

5. (a) Qualitative methods

Qualitative methods are not effective in service industry.

6. (e) Cost of maintenance

Cost of maintenance is not a feature of a queuing system.

7. (c) Involves complicated calculations

Monte Carlo does not involve complicated calculations.

8. (d) "No service" boards

"No service" board is a decision by the manager. This can cause crowed and confusion. This is not a queue discipline under Queuing theory.

9. (c) Poisson distribution

The arrival of customers in a queue follows the.

10. (b) Unlimited shelf-space

Unlimited shelf space does not exist in practice. Shelf space is limited for a retail business and is a constraint.

Unit 11

Front Office-Back Office Interface

Structure

"As far as the customer is concerned, the interface is the product."

- Jef Raskin

11.1 Introduction

The ease with which a customer can reach out for support or product information can make or break relationships.

In the previous unit, we discussed the concept of customer value and how the delivery system has to be designed to increase customer value perceptions. We also studied some quantitative techniques like Queuing and Monte Carlo Simulation, which help us to allocate the resources that will ensure the proper delivery of services and improve customer perceived value.

Service firms differ from manufacturing companies by the relatively high level of customer contact involved in services. Despite all the activities in a service firm that require the presence of the customer, a host of activities can be performed without the customer presence. In organizations such as banking,

insurance, educational institutions, and other similar industries, the application approval process usually occurs without the customer`s presence and is often conducted by employees the customer may never speak to or see. In addition, many physical products associated with a service firm are prepared outside the customer's view. The examples include diverse industries such as food services, printers, or professional services like architecture and law. The work performed in service firms that do not require the presence of the customer is normally called as back-office work, and work that does require the customer presence is known as front-office work.

Right through the service economy, there has been a shift in where, how, and by whom such back-office work is performed. In many industries, work that does not require customer contact has been "decoupled" from front-office jobs. "Decoupling" refers to separate job descriptions with different employees that are performed around the back-office work, and with those employees formed around the back-office work, and who are often removed from the physical sites that deal with customers.

In this unit, we will discuss the topic of Front Office-Back Office Interface covering the concepts of Services decoupling, Decoupling & Cost, and Decoupling & Quality, Decoupling & Delivery speed, Decoupling & Flexibility, Decoupling & Strategy, Cost implications in decoupling and Service implications in decoupling.

11.2 Objectives

After studying the unit, you will be able to:

- Explain the concept of service decoupling.
- Relate decoupling to different service concepts.
- Discuss cost implications and service implications in decoupling.

11.3 Services Decoupling

The theory behind decoupling relates back to the customer contact model of services by Richard Chase. The idea is that if a service requires some high-contact elements than others that are low contact, those activities should be separated into different jobs done by different personnel. Following example shows deposit processing in banks and post offices.

Let us consider the historical developments that happen in processing deposits in retail banks as an example of a decoupled activity. Some time ago, when one presented a cheque to a bank teller for deposit, the teller inspected the items, verified the deposit total, and gave a receipt. Then, during downtime or after closing, checks and deposit slips were encoded by branch personnel with rupee

amounts. At the other end of the transaction, when cheques written by a customer were presented for payment, clerks or bank tellers in a branch stored the cheques by the customer, compared bank statement information against the cheques, and stuffed statements on a monthly basis. The physical processing of exception items, such as stop payments and overdrafts, was also handled at the branch. The only activities still handled now at the branch level for most banks include inspecting items and giving receipts-even verifying deposit totals is performed centrally.

Postal facilities face a problem similar to that of banks: mail must be stored in a similar fashion to checks. Due to recent automation and decoupling, the Postal Service successfully met a steadily increasing mail volume with a relatively constant labor force.

Example: Ride Sharing Company Lyft Opts for Bank as a Service from Stride Bank to Facilitate Driver Payments

Lyft Inc. was an American transport service support provider that develops, markets, and operates a mobile app, offering ride-hailing services to its clients. The company recognized that driver payments through normal banking channels was leading to delays and the driver had to incur some bank charges. The company wanted to rectify this service issue and provide faster and cheaper driver payments. The company followed a "service decoupling" approach. The front end was its own website where the driver claimed his payments. The back end was segregated by going for service with Stride Bank which provided debit cards to the customers along with bank account. The drivers withdrew without delays and no service fees.

Source: https://www.thebalance.com/what-is-banking-as-a-service-5248823 dated April 26, 2022. Accessed on 20/06/22

11.4 Decoupling & Cost

Cost reduction is one of the basic arguments for decoupling, but sometimes increases in the costs can also happen. More noticeable, cost increases include increased transportation costs and substantial implementation costs. Cost increases also can come from the increased idle time in high-contact workers, an overlap of duties stemming from decoupled operations, and the reduction of duties without the reduction of personnel from high-contact units.

11.4.1 Idle time

Staffing in high-contact facilities is not usually based on average workload but instead in accordance with peak demand. The most fundamental results from waiting line theory indicate that to offer any reasonable level of customer service,

the number of service personnel must be large enough to accommodate more than the average customer arrival rate, which directly implies some idle time for high-contact personnel. Note that this time is considered idle only in the sense that it lacks direct contact with customers. If workers perform non-contact duties, the idle time can be filled. Obviously, these activities are the most likely instances for decoupling.

The amount of idle time depends on both the service level desired and the facility size. Noticeably, better service levels for customers and smaller waiting times require more employee idle time, but the effect of facility size on idle time also needs to be considered.

Different studies have shown that the same customer service rate can be achieved with high personnel utilization rates (or less idle time) in larger facilities. The basic learning from centralizing waiting lines is that relatively fewer personnel are needed to achieve the same system performance. In a decentralized system, some service personnel may be swamped with customers waiting while other personnel stand idle. When all work is centralized, this variation will not occur. Thus, smaller facilities generally suffer from idle time problems more than larger facilities. Therefore, to realize the best worker efficiency and the lowest waiting times for customers, it is far better to have a few large facilities than several smaller ones. Although this objective can be accomplished easily in case of large telephone call-centers where customers from around the world can be effectively handled at one location, it is more difficult in service encounters that must be accomplished face-to-face. This distinction is becoming increasingly important as some industries are moving toward smaller, more numerous “kiosk” facilities to increase customer convenience.

11.4.2 Duty Overlap

When duties belonging to one employee are segregated and divided among several employees, identical information may be processed multiple times in a firm. Unlike the physical goods in manufacturing industries, in service assembly lines, working on documents or listening to a customer must usually repeat some steps of previous employees. Loan officers in banks with decoupled loan processing still review an application for correctness and completeness, then send it to the loan processing department where the first step is usually, once again, to review the application for correctness and completeness. The more steps are segregated, the more this overlap takes place.

11.4.3 Duty Reduction without Personnel Reduction

The cost justification for the decoupling of facilities is usually based in part on an estimate of the work content removed from a high-contact office and the cost benefits accruing to the associated personnel reduction. The promised personnel

reduction at the high-contact facility, however, may not occur due to three reasons:

i. **The necessity of keeping high-contact workers for customer service requirements**: Customer service standards dictate high-contact requirements, so any reduction in work content of high-contact workers below the amount of idle time built into the system will not produce any personnel reduction.

ii. **Employee integrality (Rounding-off effect):** Any personnel reduction due to the withdrawal of work content must be rounded down for each high-contact facility affected. That is, if one–fourth of a person's worth of work is transferred out, no gain is made- entire person's worth of work must go to realize true savings.

iii. **Managerial philosophy in laying-off employees**: Concerns regarding morale and appropriate management technique often motivate practitioners to effect personnel reductions through attrition rather than layoffs, which may or may not actually occur, or may occur over such a length of time that the profitability of the project is affected.

Example: Nubank Customers Avoided Paying $4.6 Billion in Bank Fees

Nubank customers have avoided paying $4.6 billion in bank fees and saved 113 million hours in wait time. Nubank was a totally digital bank operating in Brazil and other South American companies. The bank had no physical offices. Both front office and back office were managed on the cloud. It provided an app-based banking services to its millions of customers at no fee without moving out of their homes. This way banking became affordable for millions of citizens. The totally digital platform optimized its operations and saved costs which were passed on to its clients in the form of no-fee or very low fee services. The services were scalable as there were no investments in extra staff to handle front office and back office. The bank saved $4.6 billion in fees to its clients and 113 million hours of wait times.

Source: https://www.yahoo.com/now/splunk-helps-nubank-deliver-digital-120300673.html dated July 14, 2022. Accessed on 20/06/2022

11.5 Decoupling & Quality

Decoupling works well to increase conformance quality. Consolidating the performance of a task from many individuals to a few reduces the variability of the system. However, true quality management requires more than conformance. Aspects of quality such as the dependability and accuracy of a service provided can be hindered by decoupling.

Presumably, by specializing tasks according to worker skills and orientation, high-contact workers who demonstrate interpersonal and public relations skills

should contribute greater courtesy and helpfulness along with the benefits resulting from personal charisma.

On the other hand, decoupling decreases the span of involvement of the front office service provider and increases the number of management layers involved in service provision. This dilution of responsibility may limit the ability or desire to respond to nonstandard customer requests, empathy for the customer, and the overall knowledge of the front-office worker.

Exhibit 11.1 describes decoupling practices in a Chennai Hospital.

Exhibit 11.1: Decoupling Practices in a Chennai Hospital

Post-lockdown, outpatient services and elective surgeries have resumed in many government hospitals, resulting in an increase in the inflow of people. Handling both COVID-19 and usual patients simultaneously has led to hospitals taking additional measures to manage crowds and ensure adherence to precautionary norms. With the lifting of lockdown restrictions, the number of outpatients visiting government hospitals is on the rise. While the Rajiv Gandhi Government Government General Hospital (RGGGH) is now receiving 7,000 to 8,000 outpatients a day, the outpatient census at the Government Stanley Medical College (SMC) Hospital is 4,000, and around 2,500 to 3,000 at the Government Kilpauk Medical College (KMC) Hospital.

"We have started regular surgeries, and our departments are functioning in full swing. The departments have been split into two, one involved in treating COVID-19 patients and the other for normal patients," P. Balaji, SMC dean, said. He added that they were making arrangements to create additional entry and exit points to manage the crowd flow into the trauma block. At RGGGH, where elective surgeries have resumed after the lockdown, seating arrangements with appropriate spacing have been put in place for patients and their attendants. Dean E. Theranirajan said stickers had been pasted on alternate seats to ensure adequate spacing and sufficient number of doctors had been posted in outpatient departments. "We have issued passes for in-patient attendants," he said.

Doctors are insisting that people should wear masks and maintain physical distancing. At KMC, authorities said measures had been taken to ensure that adequate spacing was maintained in the general outpatient departments. The hospital has been performing surgeries with departments such as obstetrics and gynaecology, trauma, burns, paediatrics and orthopaedics functioning as usual even during the lockdown. "We still have 10 persons coming to the hospital for one patient. People should avoid unnecessary visits. We have to ensure that there is no overcrowding to prevent transmission of COVID-19," a senior doctor in a maternity hospital said.

Source: The Hindu, 23 October, 2020

Example: Melia Hotel International Provide Enhanced Customer Care Through its "Front Office"

Melia Hotel International focused on training its staff to provide enhanced customer care through its "front office". Spain based Meliá Hotels International operated more than 390 hotels (portfolio and pipeline) throughout more than 40 countries. It embarked on a massive digital transformation of the company (included front office, back office and distribution) through a revamped website. While going digital, the hotel ensured humanistic approach was retained and enhanced. Training and re-skilling of its staff was a focus area to enhance the client service with empathy and care.

Source: https://www.hospitalitynet.org/news/4111113.html dated 20th June, 2022. Accessed on 20/06/22

11.6 Decoupling & Delivery Speed

Decoupling contributes to individual task speed from the task specialization, learning curve effects, and any automation that takes place. Task speed, however, is distinct from process speed. The time relevant to a customer is the time from service request to service provision, a process comprising many tasks as well as the waiting times and hand-offs between tasks. It is the waiting times and hand-offs between processes that can be negatively affected by decoupling.

One of the basic purposes of decoupling is totally opposed to obtaining quick delivery speed. Centralizing buffers the back-office from disruption and allows for a smoother workflow, which reduces costs by allowing capacity, or personnel, to be held at average demand rather than peak demand. Because holding inventory ahead of time in such services is not possible, it is specifically designed to backlog customer orders. The decoupled portion of the service is similar to a manufacturing bottleneck: It is operationally desirable to have an inventory of work available to the bottleneck so that production is maximized. If the decoupled service is not behaving as a bottleneck, it is not serving its purpose of cost minimization.

A more undesired delivery speed problem stems from benign neglect, rather than design. Decoupled back-office services depend on high-contact workers to collect accurate and complete information, yet high-contact workers are usually rewarded for sales. Consequently, the focus of the high-contact worker is not on collecting information that streamlines back-office work, which may add time or require rework at the decoupled facility. Back-office rework reduces the capacity available at the bottleneck, which in turn leads to longer delivery lead-time or the necessity of increasing capacity and reducing the financial advantage of decoupling.

Activity 11.1

Cost reduction is one of the basic arguments for decoupling, but sometimes increases in the costs can also happen. More noticeably, cost increases include increased transportation costs and substantial implementation costs. Cost increases also can come from the increased idle time in high-contact workers, an overlap of duties stemming from decoupled operations, and the reduction of duties without the reduction of personnel from high-contact units.

You are required to analyse bank operations from decoupling point of view and identify the following:

- The initiatives taken by a bank where you are a customer, to decouple banking operations for a few transactions, say cash withdrawal
- Suggest a decoupling strategy for railway reservation counters

Check Your Progress - 1

1. What is the term used to describe the situation when the work performed in service firms that do not require the presence of the customer?
   a. Front-office work
   b. Call-center operations
   c. Back-office work
   d. Professional services
   e. Decoupling
2. Which is the traditional theory behind decoupling?
   a. Product design
   b. Customer contact
   c. Time standards
   d. Industrialization level
   e. Facility design

3. What is the reason for increase in costs even though cost reduction is one of the basic arguments for decoupling?
   a. Idle time in high-contact workers
   b. Increased productivity
   c. Better time standards
   d. Higher industrialization level
   e. Scheduling costs
4. Which factor joins desired service level to decide the amount of idle time?
   a. Scheduling
   b. Customer contact level
   c. Facility size
   d. Demand planning
   e. Front line personnel discretion
5. In which way, decoupling contributes to individual task speed?
   a. Customer service rate
   b. Learning curve effect
   c. High personal utilization rate
   d. Less idle time
   e. Centralized work

11.7 Decoupling & Flexibility

The need for standardization in the form of cost reduction and the multiple channels a customer request must go through, contributes to the potential homogenization of the service. If high-contact workers see a customer need that requires bending the rules, they may need to obtain consent from multiple people in different physical facilities. Additionally, the workers in the decoupled facility who must agree to the change are unlikely to know the customer.

There is a big problem with such flexibility. In an environment where high-contact work is performed in separate facilities, high-contact workers may be willing to promise customers anything to get their business, even if they are aware that the back-office cannot provide the service. The high-contact worker thereby appears to give good service to the customer on the front end, and when the service is not delivered appropriately, blame can be shifted to the low-contact facility.

Example: Jerusalem Based American Colony Hotel "Front Office" Staff Handle Very Unusual Nonstandard Request

Jerusalem based American Colony Hotel was one of the iconic hotels in Israel attracting celebrities to stay and get pampered with service. The Hotel had some standard facilities depending on the type of the room. The customers expected the "front office" staff to remember their names even if they come once in a year. The staff was trained to do so. Also, with the help of the historical data, the staff also knew the client preferences and catered to them. Sometimes the staff faced such weird requests like total blackout in the room for light sensitive customer or removing a carpet for a dust allergy client. The staff were empowered to handle such non-standard requests up to some value. For bigger things, they took the approval on email or phone irrespective of where the approver was sitting.

Source: https://www.israel21c.org/behind-the-scenes-at-one-of-jerusalems-most-iconic-hotels/ dated May 24, 2022. Accessed on 20/06/22

11.8 Decoupling & Strategy

There are four strategy types based on the characteristics of the level of decoupling and the general strategic focus of operations. The Figure 11.1 given below explains decoupling strategy framework.

Figure 11.1: Back-office Decoupling Strategies

Operational focus	**Cost**	Cheap Convenience	Cost leader
	Service	High service	Focused Professionals
		Coupled	**Decoupled**

Source: ICFAI Research Center

The strategic focus is collapsed into the two dimensions of service and cost.

- In this conception, a number of various possible operational perspectives, such as flexibility, delivery speed, and quality are included in the service strategic focus. Although they remain distinct operational advantages, achieving them requires similar choices with respect to decoupling.
- The four quadrants represent distinct decoupling strategies that can be attained within a given industry, though not every quadrant may be relevant for every industry.
- Each of the four quadrants is characterized by an idealized set of operational, marketing, and human resource policies and is provided a distinct set of competitive advantages.

Example: Illumina Inc. Uses Decoupling Strategy to Meet Specific Needs of Customers and 100% Increase in Sales

Illumina Inc. was a global leader in Genomics. It supplied the chemical reactants needed in DNA sequencing kits. The ecommerce platform used by the company was based on web technologies and as such the front end and back-end operations were tightly coupled. So, the company was not able to cater to specific customer orders where the customer placed bulk orders but expected deliveries spread over months. The company moved to a decoupling approach by opting for headless commerce technology from Elastic Path (this decouples back end front head) to customize the various modules available in the back end with less effort and cost. The new deployment strategy led to 100% increase in sales.

Source: https://www.digitalcommerce360.com/2022/05/23/illumina-customer-conversion/ Accessed on 20/06/22

11.9 Cost Implications in Decoupling

The following are the few cost implications in decoupling:

Cost Leader: For the cost leader the operational necessity is to reduce costs. Decoupling contributes to the search for scale economies. The cost leader`s job is to track different technological innovations in the attempt to substitute automation for manual work. Duties for high-contact personnel normally will include a sufficient amount of back-office work content to avoid any kind of idle time, but all other back-office functions are decoupled. Therefore, compensation for high-contact personnel is not commission based, because customers are attracted by broad-based marketing rather than through the efforts of high-contact personnel.

This focus on cost is a common strategy across many industries. For example, insurance sector companies are now focusing on cost reduction strategy by eliminating the localized high-contact commission-oriented personnel that formerly dominated the industry. For cost leaders, technology is used primarily to save human resources. For retail banking, banks are centralizing document preparation and electronically transmitting documents to branch locations for closing of the loan. The task of loan approval at cost leader banks is also geared toward replacing manpower with technology. A loan application may be taken verbally and entered into a computer by a customer service representative in the presence of the customer. However, the branch is linked by satellite to national headquarters, where a computer statistically assesses the borrower's demographic characteristics and credit history via an electronic link to a credit bureau. Within seconds, the computer informs the customer service representative whether the loan is approved.

Cheap Convenience: In the case of a cheap convenience decoupling strategy, back-office work remains coupled accurately to the reason that cost leaders choose to decouple: Cost. Large numbers of small service units spot the landscape to augment customer convenience while providing a limited product line at low cost in what might be called a "kiosk strategy". As discussed earlier, due to the smaller number of employees per unit, these firms suffer more potential idle time in high-contact facilities. Consequently, it is desirable to maintain a sufficient amount of back-office work in the front office to fill this idle time, helping to keep costs low. Employees of cheap convenience firms should be cross-trained so that, any employee can handle any task. Respectively, it is difficult to have a broad and complex product line. Stress is placed on the employee's deployment and conformance quality. High-contact workers should be paid on an hourly basis.

Many banks apply this concept in retail banking. They use part-time employees at their branches and the cross-training levels are so high that any branch employee can take a loan application or cash a cheque. Some portions of the lending process are decoupled. For example, loans, such as auto loan and personal loans, pre-processing and loan approval are performed in the branch. For home equity loans, some portions of the work, such as arranging for an appraisal, are performed centrally. For all types of loans, problem loan collection, insurance updating, and foreclosure are handled in some decoupled facility. Employees are basically salaried with a small amount available in incentives for loans booked.

Example: Amazon is Focussing on Automating Most of Manual Operations to Retain Cost Leadership

Amazon always focused on technology-based innovations to grow. It strived to create differentiation in its offerings. The company controlled its costs efficiently and drastically reduced replenishment timeframe for inventories. All these were achieved through automating most of its manual operations.

Source: https://www.analyticsinsight.net/use-of-ai-by-big-techies-ultimate-ai-strategy-analysis-of-amazon/ dated May 21, 2022. Accessed on 21/06/2022

11.10 Service Implications in Decoupling

The following are the few service implications in decoupling:

Focused Professional: Operationally, this decoupling strategy divides high and low-contact activities, segregating and centralizing low-contact activities, but with a primary goal of supporting the front office, rather than cost control. Employee tasks are segregated according to personality type and abilities that conform to the worker suitability. Employees are specialists and are paid for task performance. Consequently, commission-based pay is very common. The target for back-office operations is primarily to support the high-contact workers in providing customer service and secondarily to control costs. Product ranges must be broad enough to meet the service objectives.

Traditional stock brokerages, real estate, insurance, and law firms are organized in this fashion. Network marketing firms such as Amway and Tupperware display some of these characteristics. For the focused professional decoupling strategy, back-office activities are decoupled primarily to facilitate task focus and to ensure consistency of quality, with cost considerations being secondary.

High service: A high service firm provides an outstanding level of personal service demanding a premium price. Maximizing flexibility and responsiveness are the key operational goals. The competitive goal is to get beyond a transaction focus into a relationship orientation. At the extreme, the relationship with the customer may be so well established that customer needs and wants are anticipated before a customer's request. Marketing relies more on word-of-mouth and community outreach than mass mailing with discount offers or television advertising.

For this strategy, back-office operations are decoupled only where overwhelming advantages are provided by technology that requires economies-of-scale to be effective. Additionally, task separation is minimized. For the high-contact worker to have maximum flexibility and responsiveness, fewer layers of management, fewer workers to coordinate, and knowledge as deep as possible about the customer, are advantageous. A broad, complex product line is needed to accommodate the range of customers' wants and needs. Workers are primarily dedicated to customers, not products, so workers need a broad skill range. The general strategy here demands local, decoupled decision making to react to local conditions.

In the personal investing industry, financial planning firms represent this quadrant. A typical brokerage would not advise purchasing real estate; it receives no commission for the transaction. Financial planners, however, cover more than stocks and bonds. In healthcare, focused firms are increasing along two dimensions: cost leaders and high service. The well-known hospital chain, Narayana Hrudayalaya cut its costs and turnaround time by focusing on heart transplantation operations requiring a standardized procedure. In contrast, health centers increase the turnaround time of patients and focus on individualized patient desires.

Embracing digital decoupling

By adopting digital decoupling, firms can focus on continuous modernization without the pain of the wholesale migration of legacy systems. As more systems are decoupled, banks can evolve towards an ever-greater service-based Exponential IT architecture that maximizes agility. This approach helps manage costs, diminishes the accumulation of technical debt and significantly reduces legacy transformation risk when the time finally comes to replace the core banking system.

Activity 11.2

There are essentially four strategy types based on the characteristics of the level of decoupling and the general strategic focus of operations. The strategic focus is collapsed into the two dimensions of service and cost. In this conception, a number of various possible operational perspectives, such as flexibility, delivery speed, and quality are included in the service strategic focus. Although they remain distinct operational advantages, achieving them requires similar choices with respect to decoupling.

- You are required to take the example of a well-known restaurant which your family visits frequently and analyse the decoupling strategy followed for their efficient services at reasonable cost.
- Identify any opportunities for further improvements in its service operations.

Check Your Progress - 2

6. Which of the following is a problem associated with flexibility and decoupling?
   a. Back-office may not provide all the requested services.
   b. High-contact workers may be willing to promise customers anything to get their business.
   c. High-contact workers sometimes bend the rules to meet customer requirements.
   d. Workers in the decoupled facility are unlikely to know the customer while delivering services.
   e. High-contact workers need to obtain consent from multiple people in different physical facilities.
7. Which of the following is not a back-office decoupling strategy?
   a. Differentiation
   b. Cheap convenience
   c. Cost leader
   d. High service
   e. Focused professionals

8. Which of the following is the operational necessity for the cost leader?
   a. Design processes
   b. Analyse data
   c. Reduce cost
   d. Develop innovative technology
   e. Launch new product
9. Why employees of cheap convenience firms should be cross-trained?
   a. Do planning
   b. Manage scheduling
   c. Handle any task
   d. Control back-office work
   e. Organize workflow
10. Which are the two key operational goals of a high service firm?
   a. Organizing and managing
   b. Maximizing flexibility and transaction time
   c. Maximizing flexibility and responsiveness
   d. Transaction focus Informative
   e. Flexibility and relationship orientation

11.11 Summary

- The decoupling of back-office service activity provides a strategy suggested by researchers and profoundly used by practitioners for some time.
- Much of the decoupling activities are pushed by technological advances and resulted in far superior productivity.
- Advantages from decoupling include both financial advantages from manpower specialization and the pooling effect of combining the work from many individual units.
- Additionally, advantages associated with a better fit between job descriptions and worker personality types can be realized.
- Many disadvantages, however, are also likely. Decoupling should lower costs and increase productivity, but due to an increase in idle time, increase in total work needed to be done due to duty overlap, the lack of actual personnel reduction that takes place, and self-serving behavior, these supposed advantages may not take place.
- The key competitive strategies of quality, delivery speed time, and flexibility may be impaired.
- The disadvantages of decoupling can be inflated by improper implementation and a lack of strategic focus.

11.12 Glossary

Back Office: An office or center in which the administrative work of a business is carried out, as opposed to its dealings with customers.

Cheap Convenience: In the case of a cheap convenience decoupling strategy, back-office work remains coupled accurately to the reason that cost leaders choose to decouple.

Decoupling: Decoupling means to separate job descriptions that are performed around the back-office work with different employees who are formed around the back-office work, and with those employees who are often removed from the physical sites that deal with customers.

Digital Decoupling: It is a process of using new technologies, data-access methods and development methodologies to build new systems that execute on top of legacy systems.

Duty Overlap: When duties belonging to one employee are segregated and divided among several employees, identical information may be processed multiple times in a firm. It is called duty overlap.

Front Office: The main administrative office of a business or other organization.

Idle Time: A period during which a device, machine, or employee is temporarily inactive.

11.13 Self-Assessment Test

1. What are the main reasons behind service organizations decoupling back-office tasks from the front office?
2. How can decoupling add to a firm's cost strategy?
3. How does decoupling affect the delivery speed?
4. Why should the decoupling tasks be centralized?
5. Describe the different back-office decoupling strategies.
6. Analyse the decoupling possibilities in a government hospital.
7. What are the decoupling initiatives taken by banks to minimise customer contact?

11.14 Suggested Reading / Reference Material

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3. Nitin Joshi, S. Rajagopalan (2019), Service Operations Management: Towards Excellence, Himalaya Publishing House, 1st edition.

4. Mathur S. S., S Mathur and Kenyon A. (2017), Creating Value: Successful Business Strategies, Routledge, 2nd edition.
5. Robert Johnston, Michael Shulver, Nigel Slack and Graham Clark (2020), Service Operations Management: Improving Service Delivery, Pearson, 5th edition.

11.15 Answers to Check Your Progress Questions

1. (c) Back-office work

Back-office work. It is the term used to describe the situation when the work performed in service firms that do not require the presence of the customer.

2. (b) Customer contact

Customer contact is the traditional theory behind decoupling.

3. (a) Idle time in high-contact workers

Idle time in high-contact workers is the reason for increase in costs even though cost reduction is one of the basic arguments for decoupling.

4. (c) Facility size

Facility size joins desired service level as a factor to decide the amount of idle time.

5. (b) Learning curve effect

Learning curve effect. It is the way in which decoupling contributes to individual task speed.

6. (b) High-contact workers may be willing to promise customers anything to get their business.

High-contact workers may be willing to promise customers anything to get their business. It is a problem associated with flexibility and decoupling.

7. (a) Differentiation

Differentiation is not a back-office differentiation strategy.

8. (c) Reduce cost

Reduce cost is an operational necessity for the cost leader.

9. (c) Handle any task

Handle any task. It is the main reason for training employees of cheap convenience firms.

10. (c) Maximizing flexibility and responsiveness

Maximizing flexibility and responsiveness are the two key operational goals of a high service firm.

Services Operations Management

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