

Chapter 14
QOS of CFA Network

QUALITY OF SERVICE FOR CFA NETWORKS

Introduction

A nation's economy can be divided into various sectors to define the proportion of the population engaged in the activity sector. In the last few decades contribution of services sector to National GDP is increasing. Telecom services play a very significant role in strengthening National economy. The quality of service and its operations is not only important to the customers but also desirable by the operators for their survival as well as growth. This handout deliberates on various aspects of service quality and services operations.

Lesson Objective

After this session participants will be able to

- List various sectors of nation's economy
- Define difference between a Product and service
- Explain service systems
- Describe Service Quality and its key contributors
- Explain Service Operations
- Business process reengineering of service operations
- Explain Service Quality and Service Operations for Telecom sector

Primary Sector

The primary sector of the economy extracts or harvests products from the earth. The primary sector includes the production of raw material and basic foods. Activities associated with the primary sector include agriculture (both subsistence and commercial), mining, forestry, farming, grazing, hunting and gathering, fishing, and quarrying. The packaging and processing of the raw material associated with this sector is also considered to be part of this sector.

The secondary sector of the economy manufactures finished goods. All of manufacturing, processing, and construction lies within the secondary sector. Activities associated with the secondary sector include metal working and smelting, automobile production, textile production, chemical and engineering industries, aerospace manufacturing, energy utilities, engineering, breweries and bottlers, construction, and shipbuilding.

Tertiary Sector

The tertiary sector of the economy is the service industry. This sector provides services to the general population and to businesses. Activities associated with this sector include retail and wholesale sales, transportation and distribution, entertainment (movies, television, radio, music, theatre, etc.), restaurants, clerical services, media, tourism, insurance, banking, healthcare, and law. In most developed and developing countries, a growing proportion of workers are devoted to the tertiary sector. In the U.S., more than 80% of the labor force is tertiary workers.

Quaternary Sector

The quaternary sector of the economy consists of intellectual activities. Activities associated with this sector include government, culture, libraries, scientific research, education, and information technology.

Quinary Sector

Some consider there to be a branch of the quaternary sector called the quinary sector, which includes the highest levels of decision making in a society or economy. This sector would include the top executives or officials in such fields as government, science, universities, non profit, healthcare, culture, and the media.

Product versus Service

Since a product differs from service, marketer has to understand these differences so as to apply proper tools & techniques to be successful.

Products' *physical* distinctions include:

- **Form:** size, shape, physical structure; for example, aspirin coating and dosage
- **Features:** such as a word processing software's new text-editing tool
- **Performance quality:** the level at which the product's primary characteristics function
- **Conformance quality:** the degree to which all the units of the product perform equally
- **Durability:** the product's expected operating life under natural or stressful conditions
- **Reliability:** the probability that the product won't malfunction or fail
- **Reparability:** the ease with which the product can be fixed if it malfunctions
- **Style:** the product's look and feel
- **Design:** the way all the above qualities work together (it's easy to use, looks nice, and lasts a long time)

Products' *service* distinctions include:

- **Ordering ease:** how easy it is for customers to buy the product
- **Delivery:** how quickly and accurately the product is delivered
- **Installation:** how well the work is done to make the product useable in its intended location
- **Customer training:** whether your company offers to train customers in using the product
- **Customer consulting:** whether your company offers advising or research services to buyers of the product
- **Maintenance and repair:** how well your company helps customers keep the product in good working order

Services are characterized by the following distinctions:

- **Intangible:** Customers can't see, touch, smell, or handle services before deciding whether to buy.

- **Inseparable:** Services are usually delivered and consumed simultaneously, so both the provider and the buyer influence the outcome of the service delivery.
- **Variable:** Services vary depending on who provides them and when and where they're provided; thus, controlling their quality is difficult.
- **Perishable:** Services are used up upon delivery, not stored for future sale.

All these characteristics can make it difficult for customers to judge the quality of a service they've purchased.

A **service system** (or **customer service system, CSS**) is a configuration of technology and organizational networks designed to deliver services that satisfy the needs, wants, or aspirations of customers. Service system is a value coproduction configuration of people, technology, internal and external service systems connected via value propositions, and shared information (language, laws, measures, etc.).

A system is an organized set of objects which process inputs into outputs that achieve an organizational purpose and meet the need of customers through the use of human, physical, and informatics enablers in a sociological and physical environment. It is architected as a set of nine interlinked classes of objects: A service system is nevertheless distinguished from other types of systems by the fact that the customer may be actively involved in all nine classes:

1. *Customer* - as initiator and receiver of the service (e.g., the customer is characterized as looking for novelty, reliability - or both);
2. *Goals* - as setting the primary objectives for the design and operation of the service (e.g., the service should an Internet shopper to configure the product variant he wishes to purchase);
3. *Input* - as a client upon whom the service is to be performed (e.g., a patient coming for treatment);
4. *Output* - as a client upon whom a service has been performed (e.g., the patient after treatment);
5. *Process* - as a participant in the process (e.g., an Internet sales transaction incorporates a dialogue facility between a customer and a sales agent);

6. *Human enabler* - as a resource in the process (e.g., an Internet sales transaction involves the customer as an independent agent);
7. *physical enabler* - as providing a resource to the process (e.g., an Internet shopper uses his own computer to access the vendor site);
8. *Informatics enabler* - as applying his own knowledge to the process (e.g., an Internet shopper uses his own know-how regarding the product to configure the model he wishes to buy); and
9. *Environment* - as setting constraints or standards for acceptable service levels (e.g., an Internet shopper demands 24-hour availability of a dialogue facility).

Types of service systems

Service systems range from an individual person equipped with tools of the trade (e.g., architect, entrepreneur) to a portion of a government agency or business (e.g., branch office of a post office or bank) to complete multinational corporations and their information systems (e.g., Domino's Pizza, Federal Express). Hospitals, universities, cities, and national governments are designed service systems.

The language, norms, attitudes, and beliefs of the people that make up a service system may evolve over time, as people adjust to new circumstances. In this sense, service systems are a type of complex system that is partially designed and partially evolving. Service systems are designed to deliver or provision services, but they often consume services as well.

Every service system is both a service provider and a customer of multiple types of services. Because service systems are designed both in how they provision and consume services, services systems are often linked into a complex service value chain or value network where each link is a value proposition. Service systems may be nested inside of service systems (e.g., staff and operating room unit inside a hospital that is part of a nationwide healthcare provider network).

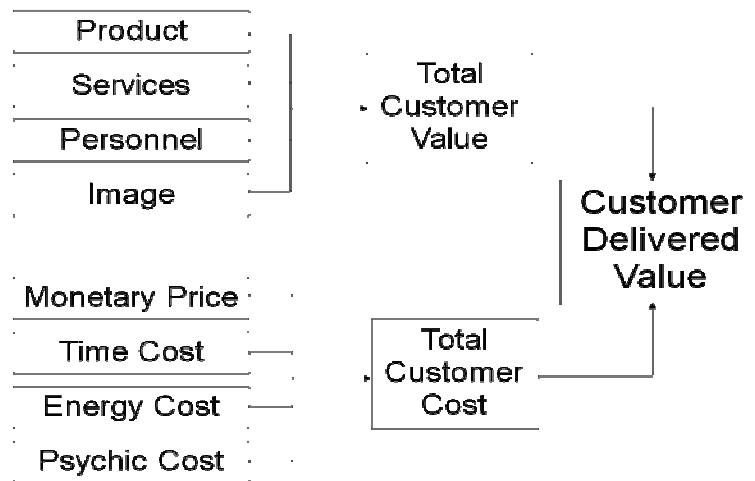
Service system designers or architects often seek to exploit an economic complementarities or network effect to rapidly grow and scale up the service. For example, credit cards usage is part of a service system in which the more people and

businesses that use and accept the credit cards, the more value the credit cards have to the provider and all stakeholders in the service system. Service system innovation often requires integrating technology innovation, business model (or value proposition) innovation, social-organizational innovation, and demand (new customer wants, needs, aspirations) innovation.

Key Strategies for managing service quality are:

- Demand management
- Pre processing
- Standardization
- Managing expectations
- Capacity planning
- People management
- Differentiation
- Quality management

How a customer derives value from any product/service:



Value of good service

- Service commands price premium
- Average happy customer tells 5 others
- Of the unhappy ones, 95% are happy if the problem is resolved quickly

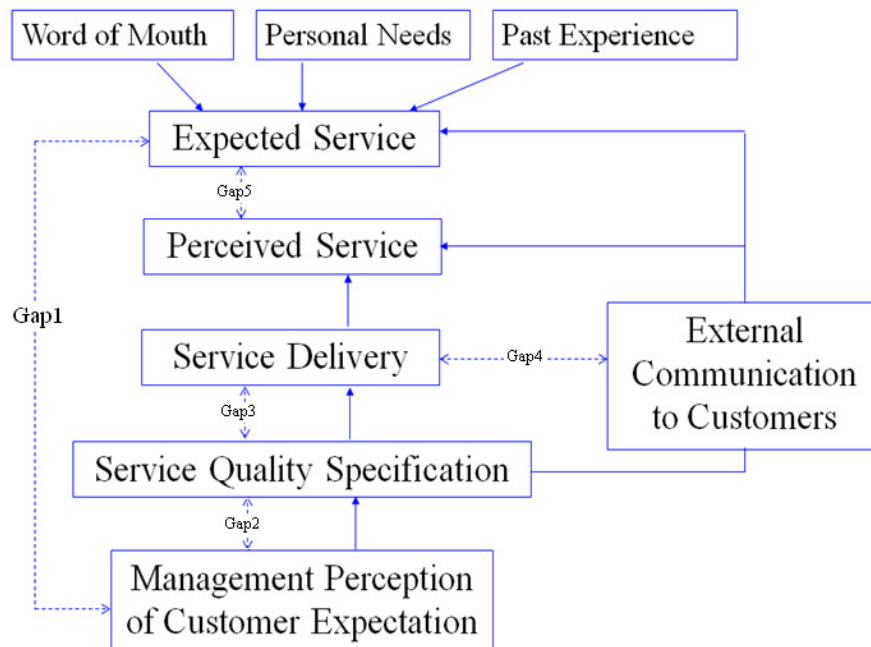
- Costs 5 times as much to obtain a new customer as keep an existing one
- Service can help offset product quality

Cost of poor service

- Customers are 5 times as likely to stop doing business because of poor service than quality or cost
- 96% never complain
- 90% stop being a customer
- Average unhappy customer tells 9 others
- Cost of losing a customer is 5 times his account

Dimensions of service quality

- Tangibles: Appearance of physical facilities, equipment, personnel & communication materials
- Reliability : Ability to perform the promised service dependably & accurately
- Responsiveness: Willingness to help customers & provide prompt service
- Assurance: Knowledge and courtesy of employees and their ability to convey trust and confidence
- Empathy: Caring, individualized attention
- Competence
- Courtesy
- Credibility
- Security
- Access
- Communication
- Understanding the User



Services operations

- Production & Consumption occur simultaneously
 - So - Management of service production & service consumption processes
- Customer is a participant in the process So - Sensitive
- Time perishable capacity
 - So - Problem of peak demand: Customer wait
 - Problem of low demand: Low utilization
 - Can demand be smoothed?
- Waiting lines are caused by variability in either rate of arrivals or rate of service or both.
- Over the long run, a service system will have both idle capacity and waiting lines. Hence, an important decision in designing a service system is how much excess capacity should be provided, to be traded off with service levels.
- Wherever possible, common Q's must be facilitated. COMPUTERIZATION and CENTRALIZATION will help. If it is a Q-hopping system, though average performances will be good, variance will be higher than possible.

- Constraints of common Q systems are
 - Need for job specialization
 - Need for decentralization
 - Layout considerations
 - In priority systems, jobs of higher priority must have the option of being serviced at 'low priority' server too.
- Waiting times should be made proportional to service times by proper segmentation. (A move towards shortest processing time rule).
- The monotony of waiting times must be reduced. Many clever means are available.
- If one is forced to have more than one Q, then the design must attempt to balance the arrival rates across the Q's.
- Any attempt at reducing variability of service times would be a good strategy in reducing waiting times. Standardization of service is possible approach.

Business process re-engineering

It is a technique to improve services operations

- Several jobs are combined into one
- Workers make decisions
- The steps in the process are performed in a natural order
- Processes have multiple versions
- Work is performed where it makes the most sense
- Checks and controls are reduced
- Reconciliation is minimized
- A case manager provides a single point of contact
- Hybrid centralized/decentralized operations are prevalent
- Restructuring
- Customer involvement
- Use of IT
- Minimize no. of steps

- Centralized information
- Decentralized decision making

Service quality in telecom sector

Cut throat competition and capital intensive nature of Telecom Projects provoke the service providers to think over service quality in a different perspective. In the process of faster roll out of networks to meet the demand, quality is the first probable item to be dropped from investments. In India, TRAI was established in 1997 to protect the interests of telcom customers. Now two factors force the operators to improve the quality of service, one is the competition and the other is regulator. Every quarter, TRAI conducts a Quality of telecom Services survey and publishes its results in public domain. The SQ benchmarks for important services are given in the annexure at the end of chapter. Many operators including BSNL are also adopting ISO 9001 certification to strengthen its system for consistent delivery of service quality.

Services operations in telecom sector

Most of the Telecom Operators have automated the operations part by deploying Telephone order Management Systems, mediation devices, Element Management Systems by networking their exchanges with customer interface terminals. Call centers are computerized. All above is implemented through ERP system. In BSNL, a massive exercise is going on for putting in place CDR based, convergent billing system which has centralized CRM for all telecom services provided by BSNL. ERP deployment is also underway where BPR is being done to improve the efficiency of various processes.

TRAI Benchmarks for Quality of Service (QoS) as on July 2009

Basic Telephony

1. Provision of telephone within 7 days for exchange areas declared “ On Demand”.
2. Fault incidences per month per 100 telephones (should be less than 3 Faults per 100 phones per month)

3. Percentage of faults repaired by next working day (should be >90%)
4. Mean Time to repair (MTTR) (should be <8hrs.)
5. Grade of Service for junction between local exchanges (should be < 0.002)
6. Call Completion Rate in local network (should be >55%)
7. Metering and Billing credibility (Not more than 0.1% of bills should be disputed over a billing cycle)
8. Operator assisted Trunk Calls (Urgent calls should be answered within 1 hr and Ordinary calls within 2 Hrs.)
9. Customer Care: Promptness in attending 95% of customers requests (Benchmarks for Shifts, Closures and providing additional facilities are <3 days, <24 hours and <24hours respectively)
10. Percentage of repeat faults (should be <1%)

Cellular mobile service

1. No. of faults (per 100 subscribers) <1
2. Faults cleared within 24 hrs 100.00%
3. Accumulated down time of community isolation <24 hrs
4. Call Success Rate (within licensee's own network) >95%
5. Service Access Delay Between 9 to 20
6. Call Drop Rate <2.0%
7. % of connection with good voice quality >95%
8. Complaints per 100 bills issued <0.1%
9. % of complaints resolved with 4 weeks 100.00%
10. Period of all refunds/payment due to customers from the date of resolution of complaints as in (9) above <4 weeks

Dialup Internet

1. Service Activation Time: 6 hrs
2. Time to Access: 30 sec
3. Probability of Accessing the ISP Node: 80% for the first attempt, 90% for the second attempt and 99% for the third attempt.

4. ISP Node unavailability: < 30 minutes/month
5. Grade of Service: 1 in 100.
6. Mean Time to Restore (MTTR): 90% within 24 hours and 99% within three days.

Broadband

1. Service Provisioning/Activation Time : <= 15days, Rs 10/day credit for delay up to maximum installation charge or equivalent usage
2. Fault Repair / Restoration Time: 90% next day, 99% 3 days, rebate slabs 3 to 7 day-7day rental, 7 to 15 day-15day rental, 15-30 days-month rent
3. Billing performance: <2% per month, complaint 100% within 4 week, refund 100% within 60days
4. Telephonic Response : 60sec >60%, 90sec >80%
5. Bandwidth utilization: <80% in peak, download->80%
6. Service availability:>90% up to june07, beyond >98%
7. Packet loss <2%
8. Latency: wired <120msec, terrestrial<350msec, satellite<800msec
9. Quarterly customer perception of service: (a) % satisfied with the provision of
10. Service >90%, (b) % satisfied with the billing performance >90%, (c) % satisfied with help services >90% (d) % satisfied with network performance, reliability and availability >85% (e) % satisfied with maintainability >85%

Questions:

1. List all the factors of Nation's Economy and explain them.
2. Why it is essential to understand difference between a product and a service?
3. How a product can be distinguished from a service?
4. How the services are characterized?
5. What are the key Strategies for managing service quality?
6. How a customer derives value from a product or service?
7. What is the cost of poor service to an organization?
8. What is business process re-engineering? What are its advantages?
9. Why service quality is extremely important today in Telecom Sector?

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