

**Production and Operation Management**  
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**Lecture 36**

**Nature of Quality and Evolution of Quality Management (Service Quality Dimensions)**

Welcome friends, in our last session we started discussions on Quality Management, which is a very important area of operations management. We discuss that quality can be studied from two perspectives, one is user's perspective and another is producer's perspective. And from the user's point of view, quality is fitness to use, that is a very popular definition of quality, whereas per the expectations of the customer we define the quality, and therefore quality becomes a relative concept.

From user to user, quality of the same product may be different, for you it may be a superior quality product but for me, it is not that good quality product or even inferior quality product. But from the producer's point of view you have a more standardized view of quality because from the producer's point of view the meaning of quality is depending on your ability to meet the specifications, ability to meet the standards. And therefore, the quality becomes more objective in terms of producer's perspective of quality.

We discussed, that quality can be explained on various dimensions and the quality of physical products, which are known as goods also can be defined on 8 different dimensions. We discuss those dimensions, from performance to features to reliability, durability, serviceability, the aesthetics, the conformance, and the perceived quality, these different dimensions of quality we already discussed in our previous session.

Now, we want to discuss the quality in terms of service products because the nature of services are very different and services are very important component of our economy. In India, more than 55 percent of our GDP is coming from services sector. So, how to have good quality services, what is a service? There are different people who have given different characteristics of service. So, we will summarize first what is a service.

Whenever you read literature related to service, the first point which comes that services are intangible. If you remember our second lecture of this course, we discussed services and manufacturing goods and in that we discussed in detail about the classification of services also, but for our ready reference we, we are going to discuss some important aspects of services. The first thing is services are intangible, that you cannot touch the service, and

therefore, you cannot stock the service, you cannot make inventory of service, in case of physical products you can make inventory of service.

The other characteristic is that, service can only be produced when a customer is there, so customer involvement is very much in developing a service, in getting a service. You can say that, service is co-created, service is coproduced. While in the case of a physical product customer gets involved only at the last stage of the value chain, when the product is available at the retailer's end to purchase that product from the retailer customer goes to the retailer and purchases the product.

But in case of service, customer is continuously involved right from the design of the service you can say. Then in case of service, the various parameters like which are not expressible in real terms, but those factors sometime may become more dominant than the service itself. And therefore, the nature of dimensions in a service product are different then the dimensions which are in the physical products. So let us see, what are the dimensions of service quality.

(Refer Slide Time: 05:19)

Dimensions of Service Quality <i>(Service)</i>	
Dimensions	Description
Convenience	<u>availability</u> and <u>accessibility</u> of the service
Reliability	ability to perform a service dependably, consistently, and accurately
Responsiveness	willingness of service providers to deal with problems of customers.
Time	speed of service deliverance <i>(waiting time is low)</i>
Assurance	ability to convey trust and confidence by personnel to customer.
Courtesy	the way customers are treated by the employees.
Tangibles	physical appearance of facilities, equipment, personnel, and communication materials.
Consistency	ability to provide the same level of good quality repeatedly.

And we start with the dimension known as convenience, how conveniently you can avail the service. So, how conveniently you can avail the service, this is with respect to availability and accessibility. For an example, if I take care of your health care services. So, whether a hospital, a dispensary is available in your village or not available.

So and that is the availability and whether that hospital is accessible, you have proper roads to reach to that hospital, whether that hospital remains open all through the day, all through

the week. So, the availability and accessibility of the service is one important thing in deciding the quality of the service.

If hospital is not there, then obviously we cannot talk of convenience. If you have to travel 10 kilometres, you have to go to another village, you have to go to taluka for taking the medical services, then your convenience factor will go down. The second is reliability, reliability you remember, we discussed in the product quality also. So, reliability here is ability to perform a service dependably, consistently, and accurately.

That all the time service is delivered in the similar fashion consistently and accurately. So, if you are having a fever, if you are having some kind of other problem, you have nausea, you have some stomach ache, so whether you are going to have proper diagnosis of that problem and then you will be given the right prescription for your problem, that is the reliability. If proper doctors are there, if proper nursing staff is there, you will say that service is more reliable.

But if you know that the proper practitioners are not there, some people who are not having the qualification up to the mark, they are serving in this hospital, so you will say that this is not a reliable hospital because their diagnosis may be faulty, their prescription may be faulty and therefore, they may not be able to treat you properly. Then the responsiveness, how quickly they are able to offer you the service, willingness of service providers to deal with problems of the customers.

So, in emergency situations, when customer requires, when the patient requires the immediate attention, something is fluctuating with respect to the condition of the patient. So how quickly you are able to take decision, whether you can handle at your hospital or you need to refer the patient to some higher centre that kind of decision making, that is the ability whether you have a ready ambulance available for referring you to the higher centres, all these are the issues related to responsiveness.

We keep hearing such kind of news in different kind of print media, electronic media that because of poor decision making doctor could not recognize that whether patient requires any specialized treatment and because of late decision, patient finally collapsed. So, those kinds of issues are related to responsiveness. Then the time, how quickly these service is delivered. If you are going to that health care centre, how quickly your treatment is started that is also very important thing.

Sometime you hear in the media again, that patient reached the hospital and the treatment started maybe after 4 hours, 5 hours, 6 hours and that is a very poor situation with respect to service quality, how quickly you are attended. And, in some of the better managed systems therefore, they have a proper system of appointment that you go to the hospital at your pre booked time and immediately you will be provided the service, so that the waiting time is low or minimized.

So, the idea is that how we can minimize the waiting time. The assurance, now ability to convey trust and confidence by personnel to the customer. So, a kind of a trust factor, and this is very important in our example we are discussing the example of health services. So, you go to a hospital, you go to a particular doctor because of this trust and confidence which you have in that doctor or in that hospital.

So, if you have, in India particularly AIIMS, we have a very high level of assurance, we have very high level of faith on the services given by AIIMS though, therefore large number of people they want that, if they can get a treatment from AIIMS their problems will be solved. So, it is that assurance factor that puts the quality of service to a higher level. Courtesy, the staff, your doctors, the nursing staff, and other supporting staff, the behaviour of those staff members that is also a very important factor in services.

Because it is the continuous involvement of the service provider and the service consumer and in that continuous involvement, continuous interaction if the service provider is not up to the mark, it is not providing the services which are properly consumed by the service user, then the satisfaction level we will be low. So, the employees, all types of employees from top to lower level, they need to have a very positive approach towards the customers.

And therefore, you must have seen in various shopping malls, you go to petrol pumps, you, whenever you are boarding a plane, so special training are provided to the employees to greet the customers. So, they greet properly by folded hands and that is a very simple example that you can understand that how good you feel when you are entering the aircraft and the air hostesses are welcoming you by folded hands. So, that is an example of courtesy.

Now in our railways also, if you are in Rajdhani, you are going into Shatabdi Express in those trains also, this kind of behaviour change is happening. So, courtesy is also a very important part of service quality. Then tangibles, though services are intangible, we discuss that services are intangible. But even in those intangible services, there are some tangible

components also. We use mobile service but in mobile service also, there is a sim card that is the tangible component of that mobile service.

So, whatever service you are seeing that is, this lecture is being delivered through NPTEL, under these SWAYAM scheme of government of India. So, you are going to have the videos of these lectures. So those videos are the tangible component of this but what I am delivering, so that these videos can be made that is the intangible part. So, by using the tangibles you can improve the service quality. If these videos are not recorded, if these lectures are not recorded, so whatever I have speaking that will go in air.

But by recording these lectures, you have created some tangible aspect of intelligibility and if we can convert to some extent the intangibility into tangible, so that you can have repeat use of those things that will improve your, you can say service features. And in that also, like the recording is happening in a studio, in that studio we have camera, we have different lighting arrangements, we have air conditioning systems, we have a proper fragrance, so that we can work for 3 hours, 4 hours continuously for this shooting purpose.

So, these tangible components also effect the service delivery, my quality of delivering the lecture is dependent on this tablet, my quality is dependent on this pen, my quality is dependent on the quality of recording you are going to have, if it becomes too hot in this room I may not be able to deliver a quality lecture.

So, these tangible things also affect the quality of service. So, the tangibles are also an important dimension of quality. You go to some restaurant basically, you go to restaurant for food, so the taste that is the basic feature of the restaurant. But what type of music is being played, what type of lights are there, what type of seating arrangement you have, whether the chairs are comfortable or not, whether the height of table is comfortable or not all these things determine the service quality of the restaurant. So, these things come under the tangible parts of the service dimension.

And then consistency, now ability to provide same label of good quality service continuously again and again. Whenever I am going to that particular barber, wherever I am going to that particular hospital, whenever I am going to that particular airline, I get the same level of service, same level of treatment that is the consistency dimension. So, many a time we discussed that initially this company was very good, initially this company was offering very good services, but later on the derailed, it means the consistency dimension is suffering somewhere.

So, in many cases the consistency dimension we need to have on sustained basis, not for the short term period but these sustained ability to provide same level of good quality is the consistency. So, that is also very important in the service quality, not only service quality but in the product quality also. So, based on these service quality, we will discuss in our, the special skills are being developed.

One is servqual, which measures the quality of service. Health care services, the gymnasium services, airline services, banking services, education sector services, so security agency services, these are some common example of services which are being measured the quality of these services, using this servqual skill. And now, lot of services being offered using online media. So, lot of explosion is happening in the literature of service quality.

So, we will not go into those dimensions or those details because service quality in itself is a complete subject which we can discuss up to 10 hours. So, we need to discuss more aspects of our quality management discussions.

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## The Determinants of Quality

- Design (Quality of design) — ①
- How well the product or service conforms to the design (quality of conformance) — ②
- Ease of use — ③
- Service after delivery. — ④

Now, so the determinants of the quality after discussing the product quality and the service quality we come to the determinants of the quality that what are the things which make the quality. One is, quality of design. So, if you divide the various things which make the quality and you summarize those dimensions into our determinants of quality, one is the quality of design. That the design which you are developing for the product that is the first step to infuse quality in your product. If proper design is not made, then you cannot have the quality.

Now, the meaning of design is, because if you have a proper design, then only you can fulfil the customer expectation with that design. If the design is not proper, how will you fulfil the customer expectation. If a customer wants lightweight pen, if a customer wants lightweight pen, so you have to design a lightweight pen. If the design is not providing the lightweight pen, how the manufacturing or other subsequent functions can provide that feature.

So, all the characteristics which customers want need to be provided by the designers, and designers are the first people who are ensuring that your product is a quality product. So, the first is the quality of the design that how you are able to understand the customers requirement. And one important thing I will like to share at this moment, that many a times even customer is not very sure, customer is not able to express explicitly that what customer wants. I want a lightweight pen; I want a lightweight pen but even I do not know what is the weight of the current pen, and how much lightweight pen I want.

So, I have to convert, as a designer this particular qualitative statement into some product specification. Customers want some xyz thing, and customers will always say those xyz things in some qualitative expressions. I want a mobile phone for which battery can last very long, no how long you want? You do not know how long your current battery is able to stand because you are continuously using your mobile phone for lot of other activities, you are not only communicating but you are using your mobile phone like a laptop, and therefore you are using your mobile phone like a camera.

So, you are using multiple applications in your mobile phone and therefore, your battery consumption is very high. Now, you say that I want a longer battery life for my mobile phone. So as a designer, I have to understand that what different things the customer will do with this mobile phone and how long the battery should be able to remain there with this much of cost parameters. Because you can increase the quality and then cost will also enormously increase. So, we need to understand that designer is the first very important person in developing the quality of the product.

The second is, how well the product or service confirms to the design, that is the quality of conformance. That the second level of quality is that whatever designer has specified, whatever the specifications are developed by the designer, you should be able to confirm, you should be able to meet those specifications. That is the second level of discussion, that first is you need to design, and then you need to make the product, you need to develop the product

which fulfils the specifications, so that is the quality of conformance, quality of meeting the specification that is the second important level of quality.

The third is, quality of use. When you have developed the product, now how conveniently customer is able to use the product. And when I am saying the use of product, it includes that availability, it includes reliability, it includes repairability, it includes maintainability, that whenever customer is using and when customer is using, obviously many a times product will fail also, so how quickly you are able to repair the product, all these things are the part of ease of use.

If it is not convenient to use, customer will not use that product again and again. So, because of some reason customer may purchase that product sometime, like an example I give you, we had some 15 years back solar cookers. Now solar cookers were promoted to use solar energy for the cooking purpose. But those solar cookers were very difficult to use it, it require a lot of efforts from the home side to use the solar cooker, and lot of safety was also required and therefore, solar cookers were distributed to some families.

But because of inconvenience involved in using those cookers, they could not pick up the market and finally, they lost the potential. So, product should be designed, then it should be manufactured as per the specification, and then it should have convenience of use also. So, quality of use is third important aspect of quality management discussion. And then, fourth is after sale services, that is also very important part because, if service is not available, this is somehow connected to the third part, where we were discussing about maintainability.

So, that maintainability factor is this, service after delivery, that when you are using a product and when it fails, when there is a requirement of component nowadays though, this concept is slowly and slowly eroding away, because many products are developed in such a way, when you are not going for maintainability, you are going for use and throw type of concept that, you use for 2 years, 3 years of period and then product fails and you purchase a new one. So, like in our markets, earlier we used to have shops for mobile repair, we used to have shops for TV repairs, we use to have shop for watch repairs.

But now if you observe, in last couple of years, just 2, 3 years if you see seriously, you will find that these shops are no more available in your market. The mobile repair shops are now more kind of shops for selling mobile accessories, because people are not interested in repairing their mobile phones, the life is like 2 years or 2 and half years, and after 2 and a half years you exchange your mobile with a new mobile phone. So, these kinds of trends are



coming. But even then, we have this concept of service after delivery that many products like, for an example, if I talk of an industrial product like turbine.

So, how quickly you can repair the turbine, and many organizations are able to get more and more order because of their this capability of providing very active after sales service support, and that is also a very important determinant of quality. So, quality is beginning from the design, and then how you are using, and then after using whenever failures are there how quickly you are able to resolve those failures, all these are the different steps in making your complete quality offer to the customer.

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Now, who all are responsible for the quality, based on our this discussion, we already have understood that top management is the most important responsible person for delivering the quality. We will be discussing in our coming classes the concept like, Total Quality Management, the complete implementation of TQM type of concepts are responsibility of your top management. Unless until, the top management is involved in the quality development, quality management, how to understand the customer, the exercises related to quality will not yield the proper results.

Then the designers are responsible, the purchase people are responsible, the production operation people are responsible, the quality assurance people are responsible, packaging, shipping, marketing, and customer sales, all these are the functional level people, all these are the different types of functions.

So, what we are trying to say, that in providing the quality, in providing the quality all these functional level people and this is the top management, these are the different functional level people they are involved in such a manner that the top management directs all the functional people and they have the integrated system, they are integrated with each other in providing the quality to the customer.

So, almost design to customer service all functional level activities are involved in providing a quality product to the end customer. And this is done with the help of top management commitment, top management directives given to the achievement of the quality.

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The slide is titled "The Consequences of Poor Quality". It lists four consequences: "Loss of business", "Liability ↑", "Productivity ↓", and "Costs ↑". A handwritten "LPG" is written in the top right corner, with a line connecting it to the "Loss of business" item. Below "LPG", there are three arrows pointing downwards, and a line connects "LPG" to the "Costs ↑" item. The slide also features a Swajathi logo and the number 6 in the bottom left corner.

Finally, we see if you are not able to make a good quality product, if you are not able to make a good quality product, one important thing is it is almost impossible in the current environment that you can survive without making a good quality product, because the environment is of LPG, Liberalization Privatization Globalization. So, because of globalization, all the best companies of the world are having their market across the globe, so you cannot think of that there is any scope for your organization with poor quality.

The globalization will not let you live without offering good quality. So, you will lose business, your liability is will increase, and your productivity will decrease, and costs will increase, that is what going to happen when you are producing poor quality. So, all types of losses means, you will lose market share, customers will go to the competitors, your liabilities whatever you have taken from the market those liabilities will start increasing, your productivity will go down because you will generate lot of scrap and therefore, you have to rework you have to fulfil the guarantee, warranty kind of commitments, and therefore the cost

of production will continuously increase because you will be generating a lot of waste lot of scrap in your organization.

So, there are very severe consequences of poor quality and organizations have realized that good quality will probably lead to lower cost. You see, the poor quality is leading to higher cost, so good quality will lead to lower cost. And therefore, we should go for better quality and we will remove some myth with respect to quality in our coming session. So, it is very important to understand that service quality is equally important, we discuss the dimensions of service quality, and then we discuss that what are the determinants of quality which starts from the design step to after sales.

The responsibility of quality is with top management and all functional areas help the top management to achieve this superior quality. And the consequences of poor quality is, the most significant is loss of business, and then the quality of your poor products will affect the, your increasing cost, your productivity will decrease and therefore, you will have a poor perceived quality in the business. So, you will enter into a very vicious circle and that vicious circle will lose a lot of business for your organization. So, with this we come to end of this session. Thank you very much.