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Lecture – 08
Translating Customer needs (Part 1 of 2)

We will be looking more focused towards Translating Customer needs.

When you develop any product the first thing what we have to do is to understand whether there is a customer need for it. In today's world there are two types of product

- Technology push.
- Markets pull.

Example-Technology push is something for example your mobile phone, 25 years back when I was in college, I never ever thought of something like a mobile phone so there was no need for it, I used to stand in front of PCO in which we use to register our names in the ledger and then we used to wait for our turn. And that time there was a scheme, run by the government that from 9:30 to 11 o' clock if you call an STD you will have to pay 50 percent of the normal price and then after 11 it became quarter.

We used to stand in big queues and then we used to register, even that point of time we did not realize that there is something called a mobile phone can come into existence. The technology got developed and slowly the mobile phones were pushed into the market or I will say touch screen; touch screen in mobile phone or smart phone. It was not what customer wanted, but over a period of time when the technology got very well matured, it became economical, reliable and then its start getting into the market, people started accepting it.

But today we buy a phone only with a touch screen. When it was started it was technology push. Technology got developed so, companyies pushed into the market so, that the customer will accept the product. And the other thing is there is a need from the

customer point of view that what they wanted from the industry. So, we have to understand what they want and then start developing it So, that is market pull, market is trying to put the problem statement and they are asking companies to develop products in which the market is ready to give money that is called as market pull ok.

We are going to talk more about market pull or we are trying to understand what customer wants and then converting into an engineering specification and from that specification we try to look into how to produce? and what to produce?. And then meet out the customer satisfaction and customer needs are like talking to a child, the child sometimes might spell out what he really wants to say and sometimes he might not even say a word

For example: when my son comes back from the school, by looking at his face I tried to analyze his mood and even without disturbing him, I post questions in such a way that he does not realize that he is frustrated and tells out his internal situation. There are some things which customer might openly say or he might not say. But, understanding the customer voice is the biggest challenge in the entire product development.

We should give lot of importance to understand the customer need and after understanding customer need you are supposed to translate the customer need into engineering specification, such that you can start producing or able to work on it. If you are able to do this you have almost solved the problem of product development.

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Contents	
• Describing Voice of the Customer	✓
• Quality Function Deployment (QFD)	✓
• House of Quality	✓
• Product Design Specifications	✓

First one in this lecture we will try to cover describing voice of customer. We will try to see a tool which is used more commonly in the industry, it is quality function deployment.

- This tool was first developed in Japan and then Toyota (Automobile maker) started using it, then American companies slowly started understanding the concept and started implementing it.
- The auto giants Ford, Daimler, Chrysler, all these companies have started using QFD. And later all the electronics industry started using the QFD and enjoying the tool and they brought lot of customer satisfaction. So, QFD is one powerful tool which is used, then house of quality, then product design specifications.

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Voice of the Customer

- The focal conviction of the item improvement process is that items ought to reflect the customers' needs and tastes.
- A standout amongst the most critical parts of the product development cycle, at this point, is to comprehend and gain from the customer.

The reasons that customers will purchase are:

- the products perform well,
- have highlights that they look for,
- are solid, tough, sheltered,
- simple to utilize,
- agreeable to utilize,
- tastefully satisfying, and
- well-known to them.

A blue double-headed arrow is positioned to the right of the list of reasons for purchase, pointing from the top item to the bottom item.

What is voice of customer? The focal conviction of the item improvement process is that items ought to reflect the customers need and taste.

- A standout amongst the most critical part of the product development cycle at this point is to comprehend and gain from the customer.

You have to keep asking him questions, you have to first choose the right audience or the right customer and second thing you have to ask questions such that the answers to those questions don't come out consciously, but it has to come out sub consciously.

And your interviewing process should be so smooth and so conducive that you understand what customer wants and by and large people pick up 3 customers and try to solve a problem.

Example: I take design courses at IIT Kanpur. I do the exercise of understanding the voice which is very difficult; so, I ask my students to form a groups in the class of 20 or 30; I divide them into 4 or 5 groups. Ask them to form small groups and then the moment they form a small group, they always go and form groups in such a way they like that person or with friends and go there and land up with him.

Then i tell them to choose the best product in market on which they are mutually agreed upon. Then what do I do? I disturb the group and I ask the students to get shifted to some other group, so I jumble the groups once again and again I do the same exercise. Now, you will see the students choices are different from the groupsthey earlier formed..

But, the students are the same and here the bandwidth of the students is same and the age group is also the same. People who are in different groups will come out with contradicting products; sometimes all of them will come up with almost similar product So, voice of customer is very important.

The reasons that customer will purchase an items are, the products perform well.

Example: If I go and buy a shirt. I always look a shirt which is, when I wear it in front of a elite community, I should stand out and people should look at me from wherever they are. Second thing is I would like that shirt to be wrinkle free, third thing I would like the shirt to absorb sweat; when I get out of the AC room, walked in a corridor I should not feel sweat.

And next thing is I would like to wear the shirts not for a very long time; that does not mean that I am not interested to buy a shirt which can withstand for 10 years. It should sustain itself till 5 years or 2 years whatever time period it should perform its best. The product should perform well, but if my father would have bought the same shirt, he would have looked for the shirt that has to have a longevity more and he would have compromised on standing out in front of a community. So, you see the difference father-son generation gap

The colour should be lustrous, such that whenever I am there in a group, whoever is there should like to see me. And then are solid, tough and sheltered, then it should be simple to utilize.

Example: We have quickly learn the skill of wearing the button on the shirt. Suppose let us assume that we do not have one hand and we still have to place the button or wear the shirt by using these buttons.

Now you will see the utilization of the second hand and the biggest challenge which we teach to a kid is, try to wear a shirt and make sure that you do not miss out holes But, if you would have come to your level of simple to utilize as though, you keep a Velcro below and then just stick it, it could have been easy. So, today shirts are coming in that way also, So, simple to utilize is something which is very important and as and when you age, again wearing a shirt becomes the biggest challenge; that is why you see very senior citizen would love to wear t-shirt or kurta wherein which there is very less buttons because, their orientation miss out.

While asking a customer you should realize his age and then it is simple to utilize. If I introduce a new company and say here is a shirt which is 20 rupees, please buy this shirt, this shirt has all these things. But, if the brand is not known to me I will still think twice to buy that shirt. So, these are the reasons why customer will go ahead and buy a product.

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Voice of the Customer

In watching customer's purchasing conduct, it has been discovered that their choices about items depend on properties that can be masterminded into eight classifications as follows:-

- 1) Cost**—Can I bear the cost of it?
The cost of the item can be utilized to pick up an upper hand.
- 2) Availability**—Can I discover it?
An item ought to be accessible when and where the potential customers need it.
- 3) Packaging**—Does it look appealing?
Packaging is the thing that the customer sees, and much it impacts the purchaser's determination.
- 4) Performance**—Can it do what I need it to do?
Execution should specifically fulfill the customers' most vital necessities.

In watching customer's purchasing conduct,

- it has been discovered that their choices about the items depend on properties that can be masterminded into eight classification as follows. See many a times we use clustering algorithm. So, clustering algorithm is in y-axis, something in x-axis, you plot points. What are these point? These points are data point which you have collected from different customers.

there are some clusters getting formed. So, there might be some data point outside the cluster also. So, the challenge is how much you capture and then form your cluster. When you would do a clustering you might miss out something, watch out for that also. Here when we say masterminded into eight classification, these eights are clusters. It does not mean you have covered all the points, you can keep expanding your cluster and keep doing it, but there might be a dilution in your focus.

You should realize, the eight classifications are thumb rules. There can be certain things which do not even fall in that, those times you have to use your prudence to get the customer voice.

Cost: can I bear the cost of it; today a mobile phone cost 1000 rupees or 2000 rupees, a smart-phone-a very low quality smart-phone which is reliable, costs around about 6000 rupees or 5000 rupees, example 5000 rupees.

Example: My servant maid who works for us is earning monthly, working in my house and other 3-4 houses, she earns something around about 8000 rupees. She had to run her family with that 8000, she does not mind to buy a smart-phone today. Why? Because, her family is at home she wants to get connected, she is working at 2-3 houses, she wants to tell them the status update. like I will be delayed, I will not come or I am free can I come. So, for all these asking she feels her time is more precious than the money.

The cost for even a person who is earning 8000 and 10000, they don't mind buying a phone of 3000 or 4000 which is 50 percent. So, cost depends on the product and the useful utility of the product.

I get a salary of approximately a lakh, again an **Example:** and when I go to the market, I see blue colour pens for writing, I get 10 rupees, a dozen is 100 rupees, but I want is only 1 pen.

If the company says please buy all the 10 pens, I give at 80 rupees, I will still calculate and see why should I invest 80 rupees, wherein which I can go for a pen which is 60 rupees buy 1 pen because, I am mindful of having a lot size or having an inventory in my house. Cost is something very important, can I bear the cost is one thing, but what is the utility of that cost? So, both questions are answered by the cost.

The cost of the item can be utilized to pick up an upper hand, generally people always look for cost. When I want to buy a house in Delhi or in Lucknow or in Chennai the minimum cost for a decent house, in a decent area minimum is a round about a crore. So, naturally I look at my pocket and see whether I can buy that or not.

when you equate the cost with is proportional to the utility. Next is availability; can I discover it? An item ought to be accessible when and where the potential customer needs it.

Availability: for example very close to a school, you are planning to open an ice cream shop or a stationary shop; I am going to succeed in the business. Because, the people will always look for availability and

- The second thing is when you are developing products you should also think of availability of resources within your close premises. So, availability is the next thing which is voice of the customer.
- Third thing is packaging, does it look appealing? Packaging is a thing that the customers sees and makes it impact the purchaser's determination, packaging is very important.

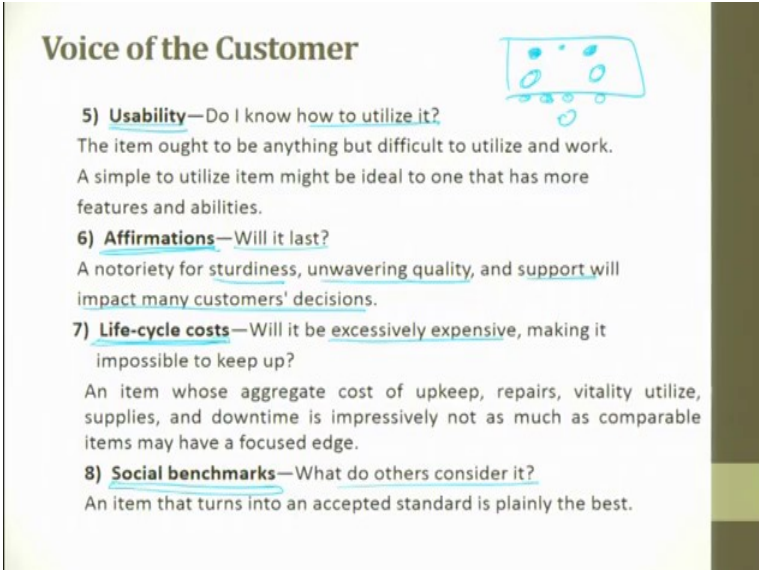
Example: At some point of time people used to say that the computer mouse not be transparent. Today people say that let the mouse cover be transparent, I would like to see what is inside, look how the packaging made a big difference. Nowadays you get a transparent mouse wherein which you see what are all the internal parts and people

would love to buy those things. So, the only packaging made a big impact to the market, the next one is performance.

Performance: is can it do when I need to do? For example, many a times we buy products, these products were perfectly very well, but during the critical time these products conquer. For example, the umbrella works perfectly very well in summer, but on a rainy day and when there is wind my umbrella fails. So, utility or the performance of this umbrella is not so, great.

People will definitely look for in when it is raining, I will go for a raincoat which I do not have to bother about any mechanism ok. So, execution should specifically fulfill the customer most vital necessity. Umbrella has to protect me from rain or a many times it is windy and rainy you take an umbrella you just protect only your head rest of your body is wet. So, the performance of the product is not so great.

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Voice of the Customer

5) **Usability**—Do I know how to utilize it?
The item ought to be anything but difficult to utilize and work. A simple to utilize item might be ideal to one that has more features and abilities.

6) **Affirmations**—Will it last?
A notoriety for sturdiness, unwavering quality, and support will impact many customers' decisions.

7) **Life-cycle costs**—Will it be excessively expensive, making it impossible to keep up?
An item whose aggregate cost of upkeep, repairs, vitality utilize, supplies, and downtime is impressively not as much as comparable items may have a focused edge.

8) **Social benchmarks**—What do others consider it?
An item that turns into an accepted standard is plainly the best.

Usability: Apple developed a product call Newton, which was very wonderful product but the product failed miserably, it did not perform as expected by Apple company. Apple company is one of the biggest players and they understand customer's voice very well. But, for them also they made a small slip. The slip was they have too much of technology ahead of time, people were not able to use all their utility which was offered by the product.

- For example, the product demanded 3G, 4G when not even 1G or 2G was so stable. Second thing it had a version of correcting spellings and other things. But, that was a time when people were not able to override and understand what the technology is trying to tell them.

Usability is very important, **Example:** I have a gas-stove burner in my house, it has 4 burners and it has 4 knobs, when I use it, I tried to use the 2 burners which are at the back side, it is very difficult, I have to make sure and plan these two fellows do not radiate so much of heat such that I can go access this fellow. And when I have 4 knobs it is very difficult. My mind and hand should coordinate and understand which knobs stands for what. And many a times we think as though we have switched off, we would have left the vessels hot there and we would have left the place by switching some other knob.

Here usability becomes a major challenge, but here if you ask me to have so much of eye and hand coordination it is difficult; where in the morning time when there is crisis at the house when kids are going, wife is going, I am going this 2 minute job makes the life more difficult to do it. So, do I know how to utilize it? These 4 are very good, if I would have fifth burner I will cook within 10 minutes, but coordination becomes a challenge.

Affirmation: will it last? The which talks about sturdiness, unwavering quality and support which impact many customers decision. There are products which work very good in the first year and slowly it gets worn out very fast. So, you look at today's success in the electronic industry, a look at success in the service industry

Example: you buy online ticket, if you have any problem you can quickly call a toll free number and then you also have an online chat feature. So, what is that their quality at every point of time when you are in trouble today, tomorrow, day after tomorrow is perfect, is reliable, is repeatable.

- For example, my father has bought an umbrella which does not have a button, over a period of time he learned the skill of using that umbrella and he does it very perfectly. When my son uses the same thing, he finds it very difficult. So, he abuses it so much and over a period of very short time it starts malfunctioning.

- For example, today student buys school shoes, earlier days we use to talk about the concept of shoe horn, today the concept of shoehorn is gone. Polishing the shoe is gone because, people look for dust free shoe, people look for shoe which is flexible, which as and when you put pressure on it yields and your leg can go inside. But it is also expected to last more.

Life cycle cost: will it be exclusively expensive? when making it impossible to keep up. An item whose aggregate cost of up keeping, repairs, vitality, utility, supplies and down time is immensely not as much as comparable, item may have to be focused edge. So, what we are trying to say is life cycle cost will be excessively expensive.

Example: I keep old Fiat car, when I was born that was the state of the art, if I still feel a legacy and start keeping the car, today I do not get spares, it is no way fuel economical. And the third thing is I do not get our driver to drive this vehicle because, it does not have a power steering. Its the life cycle cost is very high.

- The last one is social benchmarks- say for example, when I bought a car I was looking for a car which is white in colour. And at that point of time there were only few suppliers in the market who used to produce yellow colour car, orange colour car and not many people use to take them whoever picked those cars were looked as odd man out. Today society has grown up, society has accepted orange and yellow and apple green as also colours and today you see products coming in that.

Social benchmarking is also very important in the community wherever you are, do the people accept you buying this products. So, what do the others consider on it? So, whenever you buy a product please do understand people always look at owner's pride, I hold this and if people say he is holding this product, by looking at the product people try to evaluate your social or economical status.

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Voice of the Customer

- Four levels of customer requirements:-

1) Expecters:-

- These are the fundamental qualities one must offer to be focused and to stay in business.
- These are qualities that customers accept are a piece of the item or administration; that is, they expect them as standard qualities.
- Expecters are traits that are every now and again simple to quantify and, in this manner, are utilized as a part of benchmarking.

2) Spoken:-

- These are particular entities customers say they need in an item.
- They are things an organization must will to give as they speak to the parts of the item that characterize it for a customer.

There are four levels of customer requirements which leads to Kano model.

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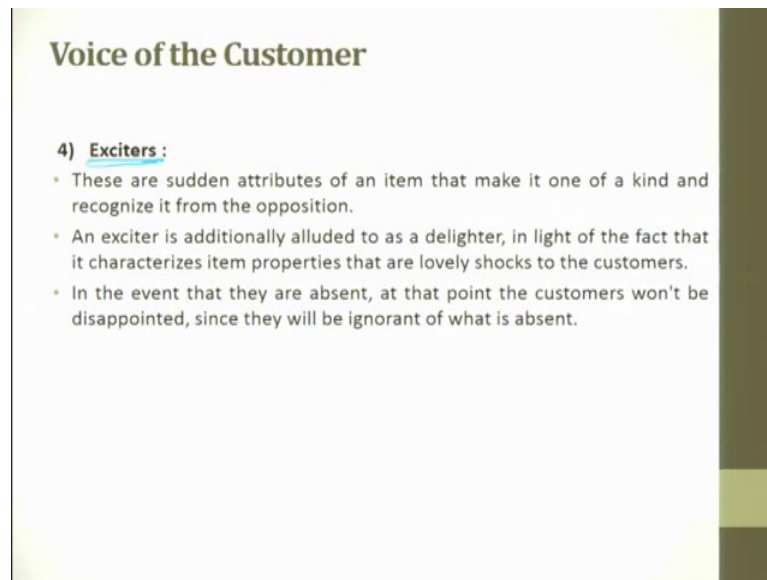
Voice of the Customer

3) Unspoken:-

- These are item attributes that customers don't discuss, however they are vital and can't be overlooked.
- It is the Product Development group's business to find what they are.
- Product Development group should make utilization of market studies, customer meetings, and conceptualizing.
- Unspoken are overlooked reactions that for the most part can be categorized as one of three :
 - i. Didn't make sure to let you know.
 - ii. Would not like to let you know.
 - iii. Didn't realize what it was.

Expecters, Spoken, Unspoken and Exciters are the four levels.

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Expecters: these are the fundamental qualities one must offer to be focused and to stay in business.

- For example, I am offering you a pen, if this pen has to sustain in the market I should make sure that the pen writes smoothly, that is the basic requirement.
- If I am operating a school the basic requirement of a school from kindergarten to 5th standard is how disciplined is the school. What amount of value addition, value education they provide to the child, what amount of learning process they teach. It is not that in the 0 to 10 years you teach more, you teach less, but allow the children to enjoy and learn more.

So, these are the expecters or these are fundamental qualities one must offer to be focused and to stay in business right.

- For example, I have a car I expect the car to start at any point of time; even in cold winter days, in heavy rain, it is starting. There are qualities that customer accept and are a piece of the item or administration that they expect them as standard qualities. When I buy a car, I make sure that there are no sharp edges and or I expect that should be no sharp edges in the car so, that it hurts anybody. Expecters are traits that our way, that are every now and again simple to quantify and in this manner are utilized as part of the benchmarking, these are expecters.

Spoken: Certain things are spoken, when my son comes back to home from school. If he is in a good mood he comes and jumps and say today in school we had a puppet show and the cartoon game like this so, it is spoken. There are particular entities customers say they need in an item. When you go to a class you say I expect the class to be disciplined or I expect pin drop silence in the class. It is spoken by the teacher and he says I am a strict teacher his action speaks, it is spoken ok. There are things an organization must give as they speak to the part of the item that characterize it for a customer.

So, this is spoken, you have **unspoken** as well, these are item attributes that customer don't discuss.

- For example, I go to a hotel and I expect the receptionist to be smiley and I get my job of registering a room within 1 minute. So, I expect this, but I do not spell it out right.

So, many a times your unspoken becomes very important, that is a time an expert understands from indirect questions what are the unspoken things a customer expects.

- For example, a shoe does not need polish, unspoken, people say I need a shoe which looks very elegant, it should be unique, all these things people say. But, they also assume that the shoe should be wearable very easily, the shoe should not stink right. So, the product development groups should make utilization of the market study, customer meeting and conceptualization for understanding it.

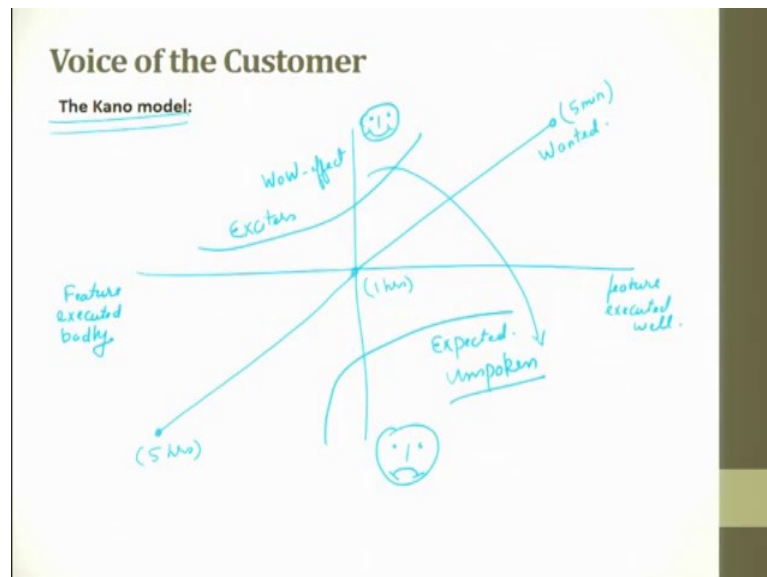
Unspoken are overlooked reaction that for the most part can be categorized as one of the three; did not make sure to let you know, would not like to let you know, did not realize what it was. And the exciter are sudden attributes of an item that makes it one of a kind and recognize it from the opposite. An exciter is additional alluded to as a delighter.

- for example, on a birthday I just walked into my house, I see a cake there and I see all my friends there. So, it is wow! I expected in my house my wife will be there, I expected they would have make some sweets.
- You go to a hotel and a moment you enter into the room there is somebody who comes and does a massage for you, it is wow! You did not expect, but they do it free of cost, they give you lot of eatables in a hotel without charge . You go to a

breakfast buffet and you see south Indian, north Indian, international, national, fruits, juice, ice-cream everything in the morning in front of you it is wow!

Because, the company always says we will give you a break free breakfast, but it does not say what is there in your menu; some company say, some companies don't say. Moment you go there you see a surprise. In the event if they are absent at that point the customer would not be disappointed, since they will be ignorant of what is absent. For example, in the same hotel when I entered if all are men and very neatly dressed I would have not even thought of the wow factor.

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What is Kanos model, let us try to draw a Kanos model. So, this is where a customer is satisfied. This is where is a customer not satisfied or customer is disappointed and this is where is a feature executed well, this is where is a feature executed badly as shoen in above figure.

When you go to the market and ask about a product; people would always like to have this and this is called as wanted.

- I enter into I tried do a railway ticket booking and I try to do railway ticket booking. So, in initial days I used to go stand in a big queue, it used to take 5 hours for me to book a ticket. Now, the number of queues have improved,

number of vending points have improved. So, I get it done within 1 hour, today it has completely become online, I get the entire ticket booked within 5 minutes.

This is what people want today. So, if I can book the ticket in 5 minutes, I am happy and the features executed very well in the entire process. This is expected, people's expectation from your product. So, when the people keep on, these are the expectations of a people which keeps going and when we move here we see features are getting executed very well here.

These are something called as excitors,

- When I book the ticket after booking the ticket within 5 minutes suppose it gives me a discount of 10 percent on a ticket fare then I would be happy.
- If I book something online and say here is a free offer for you since you book then I would be much happier

What is that? The customer is made happy, more satisfied as and when the time keeps going during the product evaluation itself the things from exciter move towards expected. That means, to say

- Suppose if you go to a hotel and in the hotel initially you thought it should be a clean room, it should be a neat room, it should have some calling facilities within the hotel. And then the bathroom should be clean and bathroom should have all the toiletry, that is your expectation.

But, later maybe 3-4 years back they started giving Wi-Fi. So, whoever gives a Wi-Fi it was a wow! effect. Today it has come to such a level that it has become a basic expectation, when you go to a hotel you expect that a free Wi-Fi is given to you. So, what I am trying to say you is the wow effect can also become a minimum expected effect or minimum expected requirements for a product. So, this is what is Kano's model; the Kano's model is exhaustively used in identifying what does a customer want.

- These are unspoken demands or requirements of the customer. So, this is a Kano's model, Kano's model was developed by Japanese professor, it is very efficient. If you use this tool very efficiently then you will see that the customer's voice is grabbed and you just convert the customer's voice into your requirement.

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Voice of the Customer

Recording the Voice of the Customer

- There are a few strategies that can be utilized to acquire customer (the end user) inclinations about products.
- Which strategy is utilized relies upon
 - the sum and sort of data required,
 - its accessibility, and the time and
 - cost designated to gather the information.
- The sources fall into two broad categories:
 - existing information and
 - new information.

The other way of doing it is recording the voice of the customer, you go around ask them to speak about a product, then they speak about the product, please record it. Why is that recording very important? Because, when you start replaying, the sectioning the voice of the customer many times, many of the unspoken things which are hidden behind could be clearly understood. There are few strategies that can be utilized to acquire customer, the inclinations about the product which strategy is utilized is realized upon, the sum and sort of data required, its accessibility and its time and cost designated to gather the information.

These are the strategies which a company chooses and then it broadly falls into two categories; one is existing information, the other one is new information, what you get by doing this recording. Existing in information can be got by understanding the voice of the customers. Suppose you decide that you wanted to know about the product, but you do not have more of customers. So, you look at the existing information; if you want to talk to people and then generate something that is called as new information.

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Voice of the Customer
Recording the Voice of the Customer

Existing information can be obtained by:

1. company sales records, including repair and replacement parts;
2. complaints, both written and verbal;
3. warranty data;
4. publications from the government, trade journals, and the consumer;
5. the company's designers, engineers, and managers; and
6. benchmarked products.

Existing information can be obtained by company sales records, in including repairs, replacement of the parts of some other company or of your own company, complaints both written and verbal. Then warranty data, publication from the government and trade journals and the consumers. The company's designer, engineering and manager and benchmarked products; these are places where you get the customers voice from which are from the existing information.

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Voice of the Customer
Recording the Voice of the Customer

New information can be obtained from:

1. Surveys, including mail, telephone, comment cards, and at the point of purchase;
2. Interviews, both face-to-face and telephone;
3. Focus groups;
4. Observation, using clinics and displays;
5. Field contacts, using sales meetings, service calls, and trade shows; and
6. Direct visits with the users.

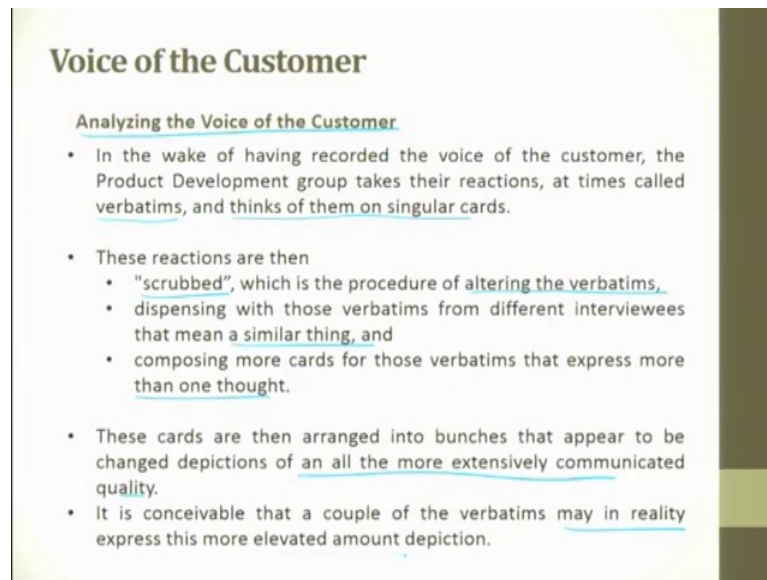
Hand-drawn diagram: A box labeled 'Record' with an arrow pointing down to a box labeled 'Direct visits with the users'.

For the new information you can do a survey, you can do interview; face to face, telephonic, you can call focus group of people. Like doing this everyday in the TV you always have expert sitting on a dais and they keep arguing about a particular point or particular agenda what they take. They section it completely and then they look and this focus group gives their views. Please do understand this focus group can also give you a biased opinion. For example, if you put four of the faculty members of one particular stream and ask them is this stream useful? then all the four will say yes it is useful.

And they keep giving humpty number of reasons justifying that this stream is valid. But, when you ask what is the utility of it then you have to have a mixed group wherein which they talk about it. So, focus group has advantage, disadvantage is like it is a knife edge or like a fire; please handle it properly. Observation using clinics and displays, you go around, you send 20 people around, your company goes 10 days to different places, talks to people, identify. You are using sales meetings, service calls etc. Then that is why you see all the service calls are getting recorded because, that will try to understand the voice of the customers.

Then today what is happening the service calls are getting recorded and then the company's tried to sell this recorded information to others, because they make money out of it. The other company wants to make a products looks for these records. These are the ways you generate new information, these are the ways you generate existing information then this all these things are used in developing a product.

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Voice of the Customer

Analyzing the Voice of the Customer.

- In the wake of having recorded the voice of the customer, the Product Development group takes their reactions, at times called verbatims, and thinks of them on singular cards.
- These reactions are then
 - "scrubbed", which is the procedure of altering the verbatims,
 - dispensing with those verbatims from different interviewees that mean a similar thing, and
 - composing more cards for those verbatims that express more than one thought.
- These cards are then arranged into bunches that appear to be changed depictions of an all the more extensively communicated quality.
- It is conceivable that a couple of the verbatims may in reality express this more elevated amount depiction.

So, analyzing the voice of the customer in the wake of having recorded the voice of the customer, the product development group takes their reaction, at times called verbatims and thinks of them on singular cards. So, what they do is, if they write the adjectives right, they start analyzing around the adjective words. For example, if they say I need a pen which is very good. So, now, that good terms becomes little difficult.

They look at the objective, they put a mapping word then try to understand, section it, then they try to get it. These reactions are scrubbed which is the procedure of altering the verbatims. Dispensing those verbatims from different interviews, that mean a similar one for example, I need a good product, I need a better product, I need a product which can perform well.

All these things are qualitative. So, you have to somehow try to convert this qualitative into quantitative. If 6 of them told all qualitative then have a discarded, one try to take 1 or 2 and then start working on it. Composing more cards for those verbatims that expresses more than one thought, it will have clustering of data. These cards are then arranged in to bunches that appear to be changed the depiction of an all the more extensive communication quality then use this in. It is conceivable that the couple of verbatims may in reality express more relevant things.

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Voice of the Customer

Analyzing the Voice of the Customer

- These verbatims have to be ranked in their order of importance.
- There are several ways to do this.

Passive way

- count the number of times the equivalent attribute is mentioned by the interviewees.
- Those that are mentioned the most often are assumed to be the most important.

Active way

- take those attributes that have been ranked the most important in the manner just described, and
- ask another group of interviewees to rank their importance.
- each ranking is assigned a number from either 1 to 10 or from 1 to 5, the higher values being the most important.

Handwritten notes: Red - 60, 1, 2, 3, 4, 5, 6

Analyzing the voice of the customer, these verbatims have to be ranked, suppose you say 8, if we had 8 classifications. So now, this 8 classifications has to be classified which is 1, 2, 3, 4, 5, 6 and start using it. Then passive way count the number of times the equivalent attribute is mentioned, those that are mentioned the most often are assumed to be very important.

- Suppose you are interviewing 100 people and out of 100 people 60 of them said Red colour, then you take that, the red colour will be people's choice in this particular time. Active way is that those attributes can be ranked to the most important in the manner just described and ask another group of interviewer to rank their importance, each ranking is assigned a number either 1 to 10 or from 1 to 5, higher the value most important it is. Ask another group, you have evaluated, then throw the cards to somebody else, call your neighbor ask him to rank it. So, then you see your ranking and his ranking and find the similarity or difference.

Now, what has happened it has become active, second person, third person gives the view. Passive is whatever they have given from there you try to take a view. A tool which is used to convert the voice of a customer into an engineering specification is called Quality Function Deployment.

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Quality Function Deployment (QFD)

- **Quality function deployment (QFD)** is a formalized strategy for coordinating the communicated needs of the customer to the attributes and functions of the item.
- It is an intense technique that makes a difference to characterize the item as far as the customer's prerequisites.
- QFD records the **relative significance** to the customer of the customer requirements.

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graph LR; A((Customer need)) --- B((Eng Spec)); B --- C((you develop ahead market)); C --> D[Product/Process]
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A tool which is used to convert voice to engineering specification, very important I say the tissue cloth has to be soft. My degree of softness and my wife's softness are different, my softness and your softness are different, softness is a qualitative one. You have to convert it into quantity, if many of the customer voice is let the food be cooked as quickly as possible. What is your quickly? Is it 1 minute, 10 minutes, 25 minutes? Looking at the age we decide, when do you cook just before going to the office. So, before going to the office how much time you liberally have for cooking, may be half an hour.

Then you try to list down what are all the cooking has to happen, cutting ,preparatory etc. So, cooking can have maximum 15 minutes. So, in that 15 minutes if you have microwave which can cook in 2 minutes. You have understood the voice of the customer, you have just converted this into some other indirect way and then found out a engineering specification. Then you said time within 2 minutes should do; then what are all the techniques available for the 2 minutes. So, microwave stands outstanding, pickup that fellow and there ends the matter; understood quality getting converted into engineering specification.

The tool used is quality function deployment, it is a formalized strategy for coordinating the communicating needs of the customer to the attributes and the functions of the items is quality function deployment. It is an intense technique that makes the difference to

characterize the item as far as a customer prerequisites are. So, you have understood all the customer needs. And you try to make an engineering spec and when you try to do this engineering specs, then you also have to understand what is that you have to develop; so, that you develop ahead of market.

Suppose you identified customer need and you identified engineering specs and you are trying to make a similar product which is already there in the market then your product sales will not be so great. But, if you can bring the wow point here, make your product more stringent and make it more performing then you would have to first understand what is that you do such that you have that wow factor integrated into your products. And then once you know this then making a product or process is going to be easy. Quality function deployment records the relative significance of the customer requirements.

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Quality Function Deployment (QFD)

Converting the perceived needs of the customer to yield a competitive advantage:

- QFD utilizes designing attributes to portray each of the item's useful necessities.
- The building qualities are connected to the customers' prerequisites.
- The item's engineering characteristics are additionally benchmarked to distinguish those qualities that must be coordinated or surpassed.
- It is stressed that the engineering characteristics are a characteristic of the functional requirement and not the customer requirement.

1	-	x	-	III
2	-	y	-	IV
3	-	z	-	V
4	-	a	-	VI
5	-	b	-	VII

Customer Need → Functional Requirement

Converting the perceived needs of the customer to yield a competitive advantage; QFD utilizes designing attributes to portray each of the items necessity.

- For example, there are 8 for 5 requirements you have said may be x, y, z, a and b these are the 5 requirements, you as a customer has set. Now, you are supposed to do your ranking of this and say this is the 1st priority I need, this will be the 2nd priority I need. This will be the 3rd priority, this will be the 4th priority and this will be the 5th priority I need. So, what was there you ask the customer to

put all your requirements then you have ranked the requirements such that you are trying to say.

In this ranking you know where I have to act. Quality function utility describes the attributes to portray each of the items useful necessity. The building quality are connected to the customer's prerequisites. The item's engineering characteristics are additional benchmark to distinguish those quantities, those qualities that must be coordinated or surpassed.

It is stressed that the engineering characteristics are the characteristics of the functional requirement because here customer requirements or needs has to be converted to functional requirements of the product. Engineering characteristics are the characteristics of the functional requirement and not the customer requirement.

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QFD and the House of Quality

The house of quality is a

- multidimensional technique that
- demonstrates the relationship of the customer necessities to the designing qualities of the item.
- It epitomizes the different parts of the customers' necessities for the item and their sentiment of the contenders' items. - SOTA
- It translates and provide judgment of the relationship of every engineering characteristic to every customer requirement.

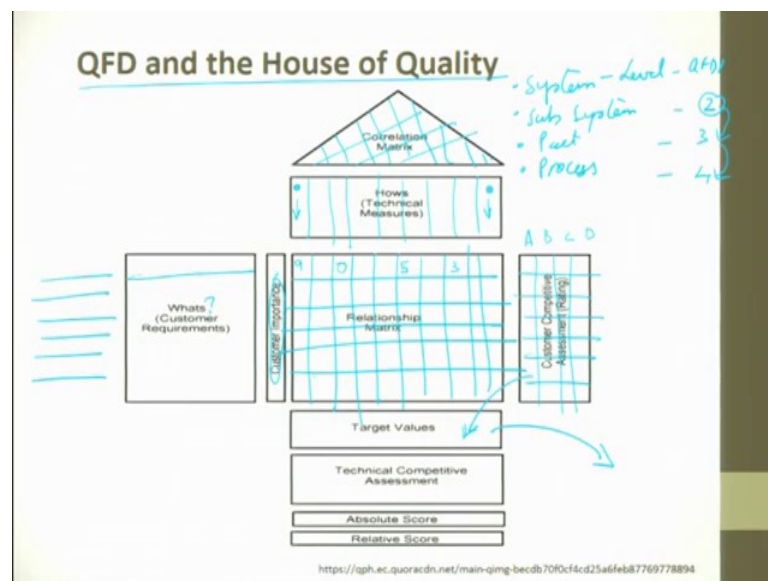
Pen → upto 3 Items - write
Cost - 5-10
colour - attractive →
[Reputable
Reliable]

There is a house of quality which is established, house of quality is a tool which is used in quality function deployment. It is a multidimensional technique that demonstrates the relationship of customers necessities to the designing qualities of the item. It epitomizes the different part of the customer necessities from the items and their sentiments to the contenders items. So; that means, to say it checks with the state of the art, SOTA: State Of The Art which is available.

- There is a pen which can write up to 5 kilometers with the cost, 5 rupees colour attractive and then repeatable, reliable. So, these are all there already in a pen; suppose you want to make a pen, a new pen and you want to come into the market. So, then it has to be 7 kilometers, this has to be 4 rupees, the colour has to be something different, repeatability and reliability have to be high when the performance of the product is there.

how do you know that you wanted to enter into the pen market? you have got the pens requirement from customer. There is already a product which is available in the market, you understand what is the product and how does a product perform. And then now based on that product you try to a fix stringent requirement such that you can try to bring out a new product. It epitomizes the different parts of the customer necessities for the item and their sentiments, to a sentiments of the contenders item. It translates and periodic and providing judgment of the relationship of every engineering characteristics to every customer requirement.

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This is how a house of quality looks like, you write down all the customer requirements. that is called as wants of the customer, then you rate the importance among the customer requirements and then what you do is you try to write down, what these customer wants? how are they made? for example, I want a pen less than 5 rupees. So, naturally what you

have to do is, you have to look at the material property. I want a pen to be more reliable or repeatable then look at the viscosity of the pen and the quality of the ink etc.

So, what are the customer wants? and how are they going to be done? And here what did you do? You try to put all the customer requirements and rank them 1, 2, 3, 4, 5, 6. Now what did you do? You tried to establish a relationship between what and the how, how did you do it? You can try so, you will have something like a matrix like this and then assuming that there are 5. So, now what is happening? For this requirement what are the importance in this, what is required from the customer. And how are you going to if this relationship is high you try to give 9 marks; there might be a state that there is no relationship.

You give them 0 marks, if it is ok you give them 5 marks, if it is 3 marks. So, what have you done? You have converted what is and how is relationship in terms of numbers. Why? Because, then these numbers make your work easier. For example, A, B, C, D, customers are products, who are all the other companies who are making similar products and what, how are they rank or rated by people?, based upon the customer wants.

Again you give them number. So, what happens is that? With this you are now able to set, what is the target value you have to set; such that you are able to bring out a new product with wow effect and reach out the products.

you can have a system specification. Then you can have sub system specification, then you can have part specification, then you can have process specification so; that means, to say from level, QFD 1.

then you can have QFD 2, you can have QFD 3 and QFD 4; that means, to say you try to take the target and start working on the next QFD; again you put that as customer want's and do it.

In this lecture we went through

what is customer voice? how do you understand it? what is Kano's model? and then we have seen some basics of quality function deployment.