Managing Services
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Lecture - 22
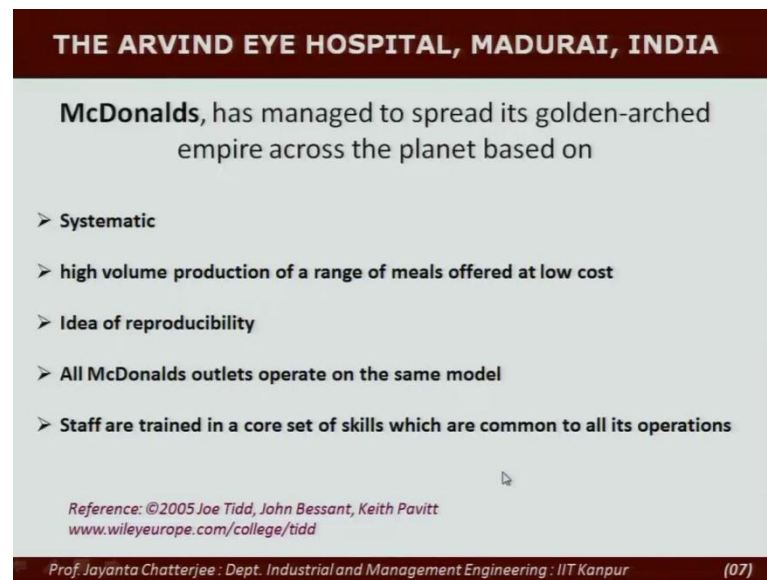**Case Study on Service Excellence – II**

Hello, this is Jayanta Chatterjee from IIT, Kanpur. We are discussing services management and contemporary issues in today's world. Last session we were discussing about Service Excellence, we were particularly discussing as a case study, the great example of Arvind eye hospital in Madurai and other parts of India now.

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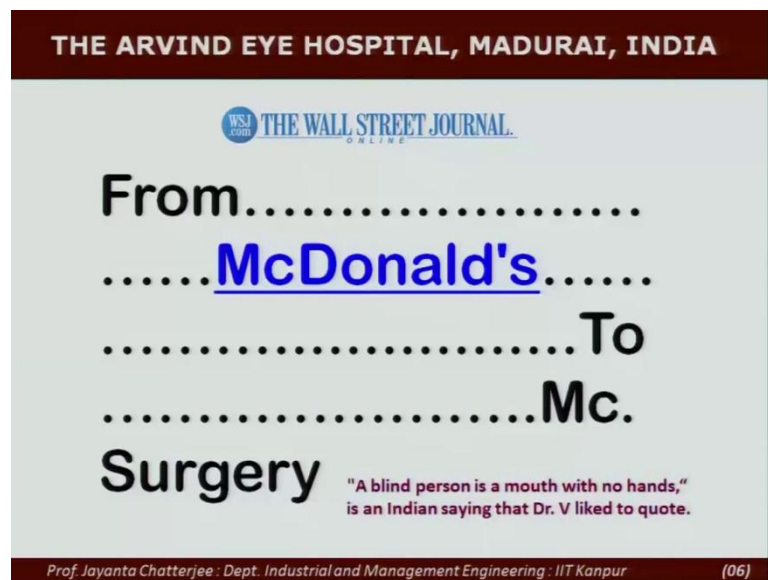
We ended last session with the famous saying from McDonald's to Mac surgery, quoting from a Wall Street Journal article which was a favorite quote of Dr, V. Dr, G Venkataswamy. Why McDonald's? Because, McDonald's was at that time remains today.

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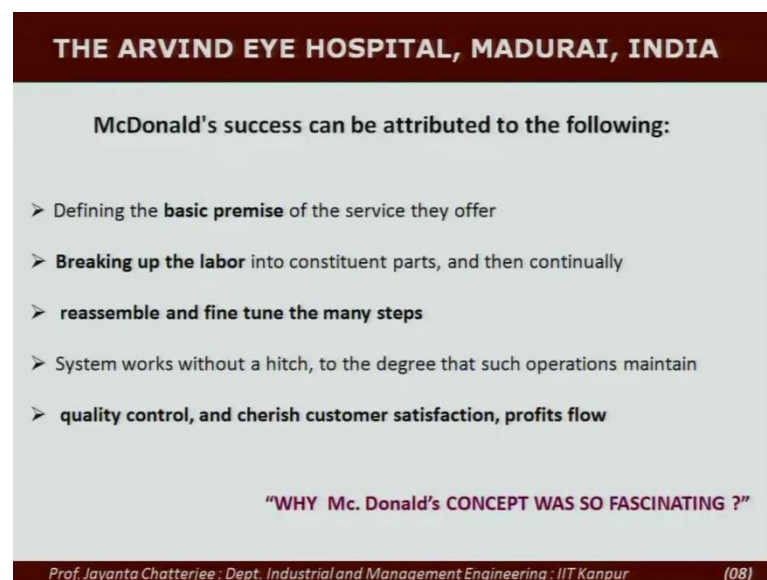
Example of a great service organization providing good quality, high volume meals at low cost across the world, based on the idea of reproducibility and as we highlighted that all McDonalds outlets, they operate almost on the same process model following the same process steps replicated at all outlets, whether in USA or Calcutta. India people are trained with the same manuals with the same instruction sets.

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As a result, everybody within that service organization and they are customers are very clear about the basic premise of the service on offer. The work is broken up into

constituent parts and they are continually then reassembled and fine tuned for good delivery. In the basic process blocks, there is no compromise; there is no variation, as little variation as can be possible at six sigma level. Failure rates in that in terms of few parts per million, but they do have discretion, the discretion is reassembling and fine tuning and we will see some techniques of this reassembly again to optimize the process.

So, the system will work without any glitch, because block to block transfer, the customer as he or she proceeds to the service flow will follow predetermined, repeatable, well worked out steps. So, therefore, quality control can be uniformly maintained and customers will be happy, there will be willingly paying customers coming at Aravind door step more and more who will subsidize, more and more patients whose care can be provided therefore, free of charge and that is why to Dr. V the concept of McDonald's was so fascinating.

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So, to summarize and bring the parity, we start with this high quality process at low cost and it was the insight of Dr. V who could understand that cataract, unlike many other surgical procedure could be broken up into process steps, which could be performed repetitively without the need of very lot of variation. So, the per unit surgery cost will be varying very little, cost could be accurately calculated and same procedure repetitively performed could ensure optimize set-up for the facility.

Training procedures could be standardized and cataracts therefore, were surmised as a procedure oriented curative treatment. So, people were willingly to pay, because the curative transformation was very impressive, a person who could hardly see because of the cataract coverage could see almost immediately after the operation. So, people were willing to pay and more people paid and were satisfied with good result, more people from villages, poor people could be treated.

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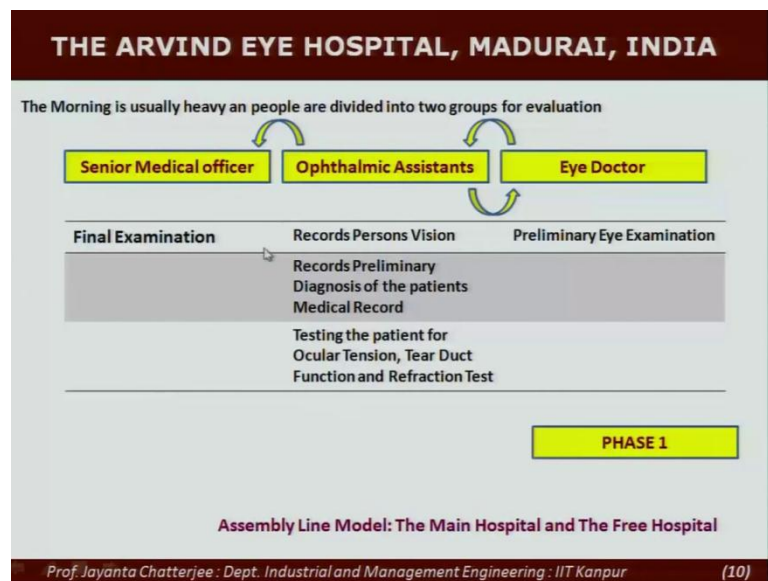
So, we will now look into the science of it a little bit, so you see in front of you now a typical situation. So, there are eye doctors, there are ophthalmic assistance and there are senior medical officers or experts or surgeons. So; obviously, these are people who are very high valued, few of them relatively less expensive, but also high valued process owners, the eye doctors and there were lot of people who were getting screened at the ophthalmic assistant level.
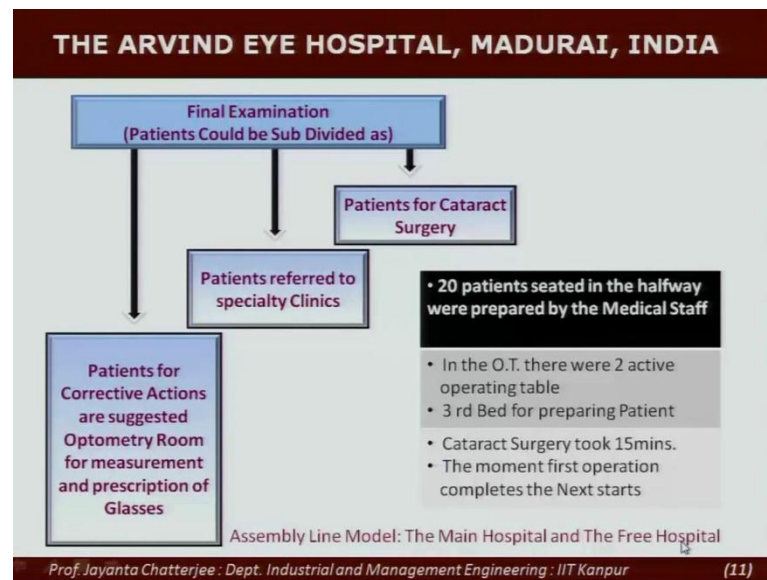
So, what Aravind eye care did is the final examination, they started sub dividing into number of process flows. So, patients for corrective actions are suggested to go to the optometry room for further measurements and pre operation determinants. Patients were referred to specialty clinics, who add actually more critical problem and patients for cataract surgery were segregated. So, people who could not immediately be attended to and needed much more specialized treatment were segregated, patients where more information were needed, corrective actions could be suggested and they were send on another stream.

So, the patients who are for cataract surgery where therefore, brought out and fed into the process flow. Here again, it is almost similar to what we discussed when we were discussing about streamlining airport operation. So, just at before the aircraft lands, people have been already accumulated at the gate as a sort of stock in a container and as soon as the aircraft lands and he is cleaned, these container load of people are then transferred. So, this is like a stock and flow, which is very popular in designing good process flows.

So, similarly here we had 20 patients seated in the hall way, they were getting prepared by the medical staff, all the preoperative procedures were going on while they were waiting. So, number of activities therefore are merged before the critical steps are taken, this is also what we have discussed before, where non-value added steps are removed.

So, just waiting is removed, but waiting with simultaneous treatment going on is retained.

So, activities are merged and as far as possible, idle activities are removed. So, 20 patients are in the queue waiting, but not waiting ideally they are getting treated, they are getting processed and then, even within the operation theater they had 3 beds. So, one bed was for the person now almost fully prepared. So, the doctor was only doing the final cataract operation, which is lifting of the atrophied organic lens and then insertion of the new artificial lens in that sack.

So, original human lens taken out, the artificial lens inserted, this is the most critical operation could only be performed by a trained doctor and the doctor therefore, did only this. The doctor did not give eye drops, the doctor did not check for other problems, the doctor did not do the blood test, the doctor was not cleaning the operation area, the doctor was only doing take lens out, put lens in, take lens out, put lens in. As a result, the number of operations could be enhanced significantly.

Now, about four operations, four cataract operations could be done per hour, I think they have now achieved the level of six. So, as suppose to 10 patients who could be treated or 15 patients by a doctor in the whole shift, the same doctor could now atleast treat may be 30 patients, 40 patients without fatigue, without stress and at a higher level of good performance. So, this is the famous assembly line model applied to health care.

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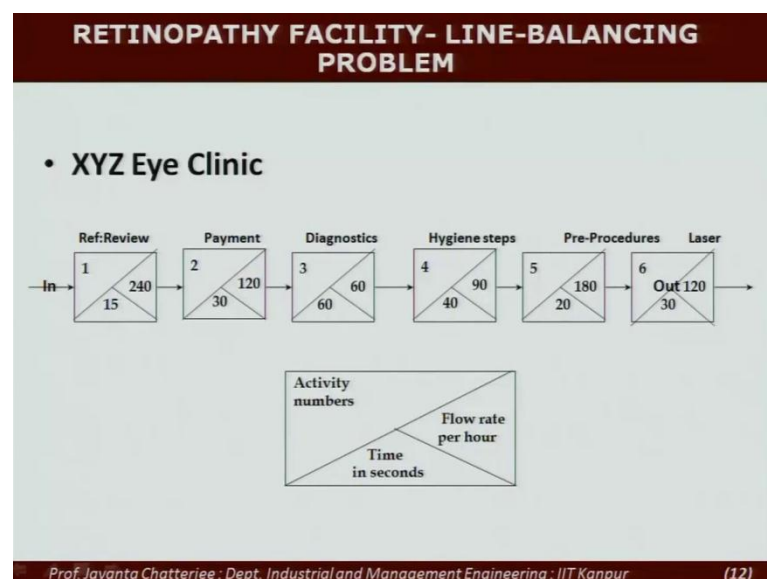
And has been then studied for use, this was adopted for cataract surgery, but in many different ways, the derivatives of this understanding this process insight were then applied by Aravind and other hospitals around the world for treating more critical operations, like say diabetic retinopathy. I will now show you an example that how this is done by taking almost equivalent data from an eye clinic, it is somewhat it is not based on very wide sampling, but in most eye clinics it will be same.

So, usually what happens is that the patient comes in there are paramedic personal who will review the referral from the doctor and usually the people who are coming for retinopathy problem they are diabetic patients. So, they will have lot of medical records etcetera which will need to be checked. So, you see this is a typical diagram, which we use for this kind of process flow and for line balancing.

So, in this block there are three sections, the this one is the activity number, here as you can see here it is the flow rate per hour. So, each person for this referral and previous medical record review, suppose needs 15 seconds these are somewhat hypothetical numbers. But, you can change the number 15 seconds can become 15 minutes, but in that case more or less all of these numbers will also similarly go from second to minutes, but at the moment let us stay with the seconds.

Here, this is actually the total number of seconds available in an hour, which is 36, 100 divided by 15. So, which means the number of people coming out, coming in to this process block, whatever may be the number coming in at the most 240 people can go out of the process block. Now, these 240 people then go to the next process block which is making payment, suppose that takes 30 second; obviously, therefore, 36 100 seconds 60 seconds to a minute multiplied by 60 minutes to an hour, so 120 people can be processed, you can see that a flow of 240 now drop to 120.

In the next step where lot of diagnostic tests will be done say that those tests takes 60 seconds per person. So, even if you have lot of machines etcetera doing number of tests at a time 60 second per person. So, which means at the most we can process 60 people in this block, in the next flow where there may be you know the patients dress will be changed and certain hygienic steps will be done. So, that the operation can be performed and some preparatory procedure will be there and that suppose takes 40 seconds per person.

So, which means we are looking at processing 90 people now 36, 100 divided by 40, 90 within have a step of 20 second 180 and number of finally, the actual operation critical operation is the laser operation and suppose that takes 30 seconds only. So, which means theoretically speaking 120 patients could be processed per hour, but as you can see here even though 240 people were let through the first step that drop to 120 that drop to 60.

And therefore, the next one even though 90 people can be processed and in the next step 180 people can be processed, there are already people waiting here. So, this is what we called in process bottle neck, where queues start forming and therefore, the overall flow cannot reach the optimal level of 120.

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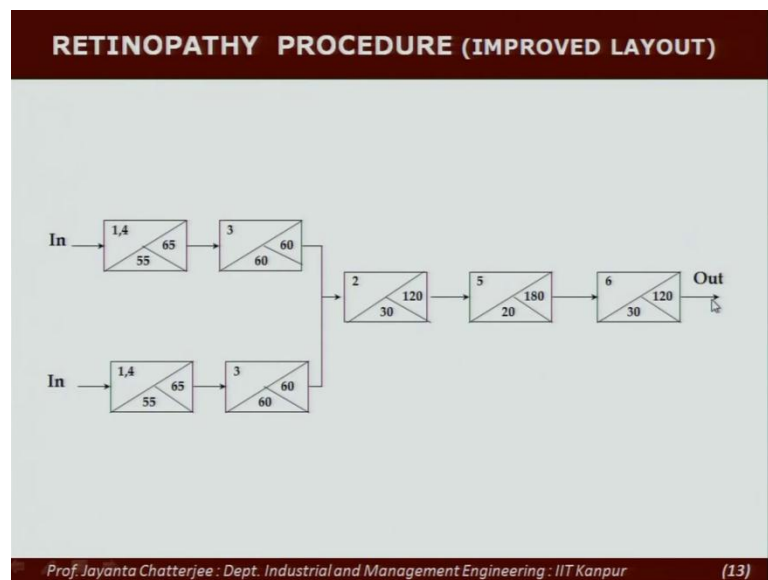
The solution that we do this is what application of data based process signs combined with good understanding of health care, eye care one can create service excellence. So, let us see here two functions are combined, two parallel lines are created and as you can see 1 and 4. So, 4 was hygiene steps, so 1 and 4 are combined, the step which is number 3, which is diagnostic is comes after that and the payment comes after that.

So, what you do is you look at all these understand that this is the one which is taking longest time therefore, this is the bottle neck and you try to create parallel operations and combinations. So, that ultimately you are able to achieve a higher level of through put.
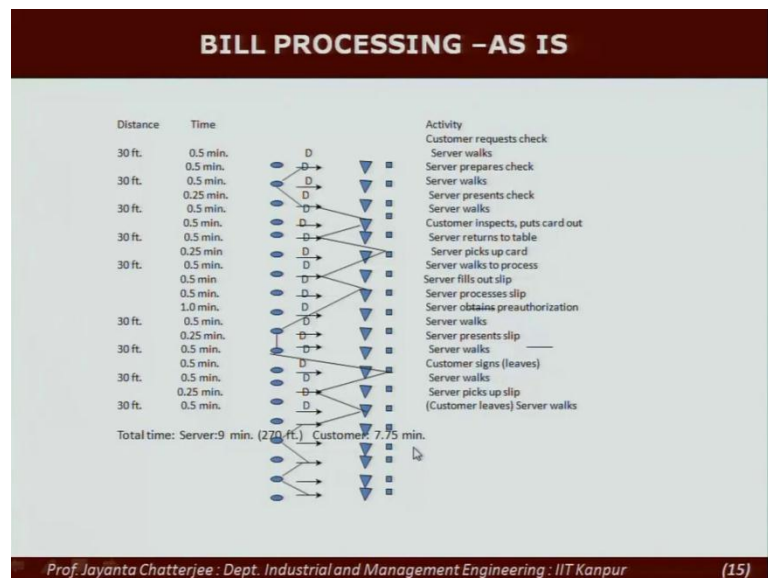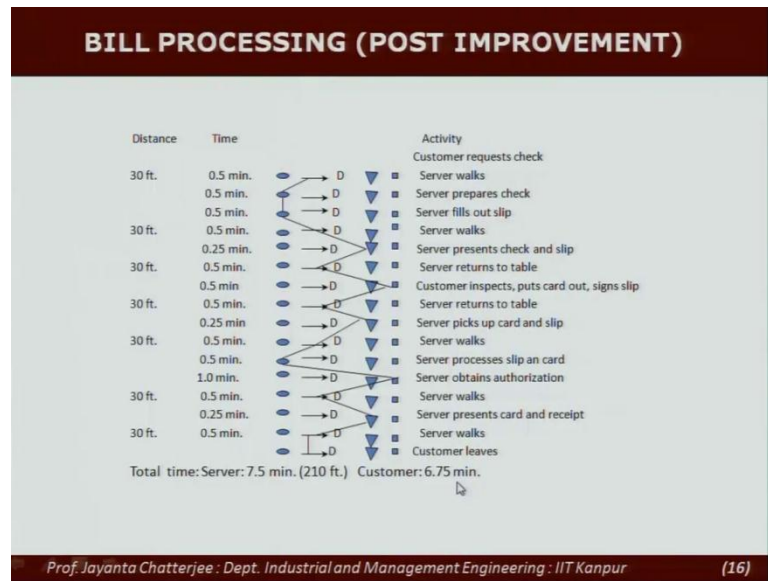
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This is a very simple example, if it is a much more detail steps we can use this process symbols.

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And can create what is this chart, this is the process chart here we are looking at each step the motion, the distance the patience has to travel or the operative has to travel, service provider has to travel and the time mid takes. And here as you see at the end we have taken the server, the service provider is taking 9 minutes and the customer is in the process for 7.75 minutes.

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But, by optimizing the process that we discussed we can achieve. The customer will now be in the process for 6.75 minutes, saving of 1 minute per person can make a remarkable difference in the flow and in avoidance of queues.

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So, therefore, this is dr. V's insight by adopting good process management practices, industrial engineering practices almost manufacturing like assembly line practices and understanding that it can be applied to cataract surgery. He created this global excellence this world famous example of service excellence. Important point here that Aravind eye

care is a great case to study not only because of their application of manufacturing science or process flow understanding they also understand.

For example, that in India lot of people do not come to the operation theater, because they are scared of operations, they are worried about the expenses, they are worried about what will happen next. So, Aravind eye care has created a lot of what we called earlier customer co creation, they have involved volunteers from community. That means, other customers who have been treated and who have been cured participating in eye camps, talking to intending patients, a swaging them in assuring them. And thereby through this eye screening of school children, free eye camps they have ensured that there is a continuous flow into this high capacity process which they had created.

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So, to summarize to create service excellence we have to understand the nature and objective of that service organization. We have to streamline the process using science, manufacturing science, process flow diagram, process optimization, line balancing and so on. Understand the need of combining, frugal utility with requisite level of customer comfort, involve the community to provide assurance to spread the message of reliability and of course, there are other great things done by Aravind eye care foundation with respect to eco-friendly may be I will discuss that at a later date.

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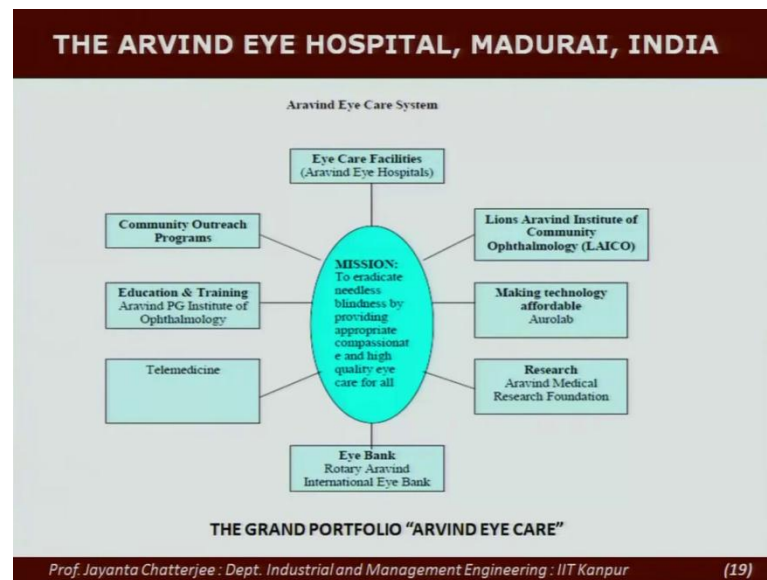
And the result is this fantastic example of creation of a great enterprise across the world influencing large number of countries providing all kinds of eye care very intricate processes. So, starting from cataract surgery today they cover a large number of different types of eye care procedures at a very reasonable cost and the good thing it is just like McDonald's, this eye care model has been successfully replicated adopted and replicated by others.

So, I will request you again to look at Aravind eye care case studies on the web through Google, listen to great experts talking about them on YouTube and look at this session of yesterday and today again and appreciate the nuances, the steps that are necessary to create service excellence.

Thank you.