Marketing Analytics
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Social Network Analysis and Excel Dashboards (Contd.)
Lecture 62

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Hello everybody. Welcome to Marketing Analytics course. This is Doctor Swagato Chatterjee from VGSOM IIT Kharagpur who is taking this course. We are discussing Social Network Analysis and in this particular class I will discuss about a Manufacturing Company Case Study in this context of marketing.

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So this particular case study has been taken from one of the cases that is published and the company is a global leader in manufacturing integrated circuits. This is something a hi-tech product is something that they manufacture.

Where is it applied? It is applied in automotive, in electronic products, in IT companies, this is the various places where the products of this manufacturing company is sold. And they have 2 plants in Thailand and they have around 6000 employees. And they are trying to be customer-oriented.

So what is customer-oriented? This is a important term that that we face in marketing. Customer orientation means that everybody in the organization, so I am saying that handling customer is not the marketing person's job, it is everybody's job in the organization.

So customer is king. We have to make the customers happy, satisfied, this everybody, even the finance person, the manufacturing person, the marketing person, the sales person, the HR people everybody should understand this. And when the whole organization changes its culture to be focused towards customer's happiness irrespective of the organizations people's position or job role then we can say that this particular organization is customer-oriented organization.

So to be customer-oriented organization everybody has to think about the customer but that is not easy. You have to understand, let us say in an organization there are various people, various groups of people who has various goals and they are judged in different ways.

For example a marketing person will be judged by how much he has contributed towards the brand image of the company. A sales person will be judged based on how much revenue he has generated. And then comes the finance person who is the controlling person who will be judged based on various kinds of financial ratios that we have.

HR person will be judged based on attrition, based on attendance, based on employee engagement, based on cost to hire and there can be so many other aspects. And then there will be manufacturing person who will be judged based on productivity, cost reduction. So all, supply chain person will be also focused on cost reduction, timeliness and etc so each of these silos, each of these departments in the organization has different roles to play.

Now if you say everybody has to be focused on only the customer then there is a problem. There is some kind of a problem happens. And that problem often comes from lack of social connection between these people.

The marketing person, a marketing manager hardly he would not even know, in 6000 employees kind of organization he might not even know the manufacturing guy. So if people do not talk with each other then the chances of having an idea about what I am selling, what are the problems of the manufacturing guys will be very low.

On the other hand manufacturing guys will not know what does these sales or marketing guys are doing. They think that they over-promise and that all the promises we have to cater to those promises and blah, blah, blah then there is always a tiff.

That kind of tiffs were happening in this organization also and which were being seen in this complaint handling part. So the problem was there were lots of complaints which were coming up and the handling of those problems was not happening in a good way.

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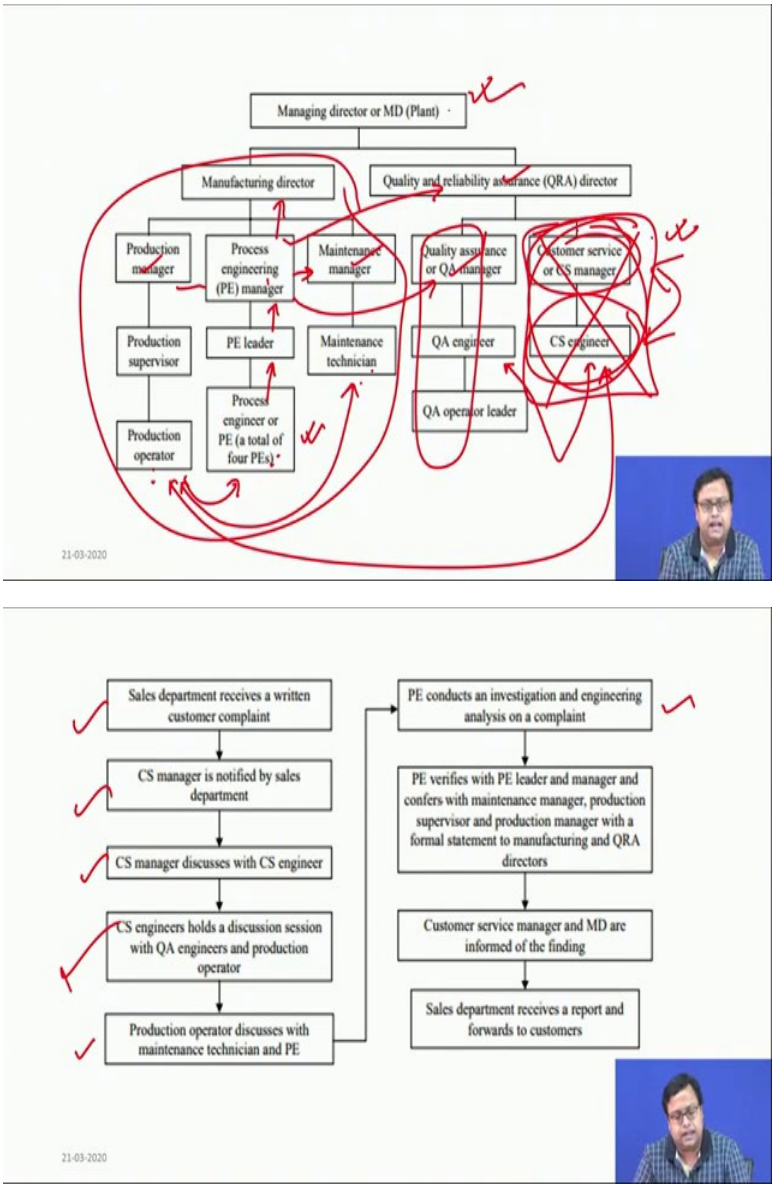

So this is the major organizational structure. There is a Managing Director or MD of the plant. Then there is a Manufacturing Director and there is a Quality and Reliability Assurance Director. There are two, I would say trees and under manufacturing there is a Production Manager, Process Engineer and Maintenance Manager.

Under Production Manager there will be Production Supervisor, and then the Production Operator and under the Process Manager there will be a Process Engineering Leader and Process Engineer, lots of Engineers and the Maintenance Managers, under that there will be Technicians.

On the other hand in the Quality and Reliability section, there will be a Quality Assurance persons, QA engineer and QA, Operator Leader, and then there will be a Customer Service

Manager, a Customer Facing Manager. So basically if you think that this tree is absolutely different from this tree.

So if I just focus on this tree, this tree has little connection with this tree, only some bit of connection with these people but they might not have any connection with these people. So then how will I do this service management?

So Sales Department how the complaint is generally handled, that process, so these guys have hired the company, hired the professors as consultants in this particular organization because they were happening in the, they were facing this complaint handling kind of issues and the professors were went there and the professors actually asked them that how do you generally handle these complaints? Can you give me an idea that if you are having lots of complaints how do you generally handle?

So the handling process is something that is mentioned here. The sales department receives a written customer complaint first. Then the CS Manager who is basically this person, CS Manager is notified by the Sales Department. CS Manager discusses with the engineer, so who has an engineer, these two persons discuss with each other. Fair enough so they discuss with each other.

Then the engineer holds the discussion session with the QA engineer and production operator. This person talks with QA engineer and the production operator, fair enough. Then production operator discusses with the maintenance technician and the production engineer, so, this process engineer he talks with this and then he talks with also these two people.

Then once all of are talking PE conducts an investigation, the Process Engineer conducts an investigation and engineering analysis on the complaint. Okay so this person does some amount of investigation. Then PE verifies with PE Leader and Manager whatever he did he sends it to this person, he sends to this person. That verification happens and confronts with Maintenance Manager, Production Supervisor and Production Manager with the formal statement to Manufacturing and QRA Directors.

So after this they go to Maintenance Manager, Production Manager, QA Manager, so from here it goes to various people and also some formal intimation as it was written so with a formal statement to Manufacturing and QRA Directors. So Manufacturing and QRA Director, they give a formal this thing.

Once that is done, Customer Service Manager and MD are informed of the finding. So then Customer Service Manager and the MD comes to know that how the complaints are handled and Sales Department receives the report and forwards it to the customer.

So this is the whole path of processing. It comes here and then these 2 guys discuss with each other. Then he passes the information to Production Operator. Production Operator gives it to PE Engineer and Maintenance Technician. PE Engineer, Maintenance Technician, Production Operator discuss with each other and then create a proposal and send it to PE Leader and then PE Manager.

PE Manager talks with Production Manager, Maintenance Manager, QA Manager, finalize the proposal and send it to Manufacturing Director and QRA Director. Once QRA Director and Manufacturing Director also finalize that, that comes to CS Manager and MD Plant, then when CS Manager also approves it, it goes to the Sales Team. So there are lots of steps in between for a complaint handling.

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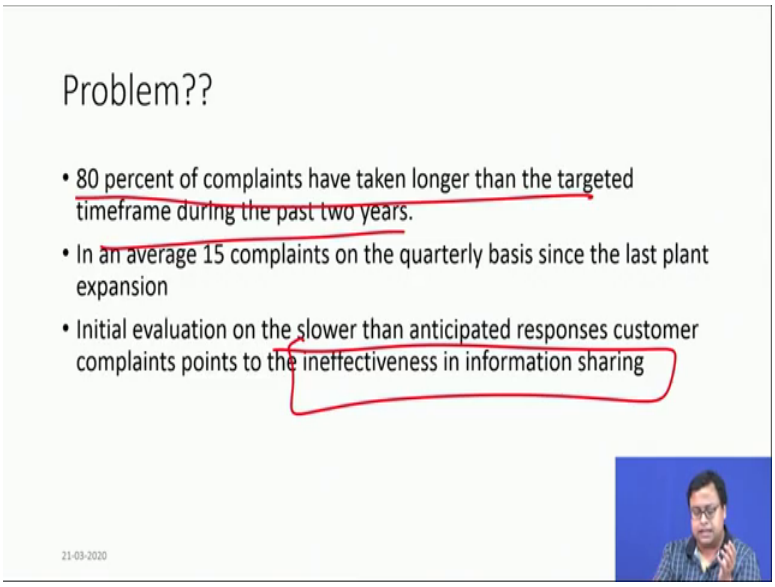

What was a problem then? 80 percent of the complaints have taken longer than the targeted time frame during the past 2 years. So this is the major problem that 80 percent of the complaints are taking more time and in average 15 complaints on the quarterly basis since the last plant expansion.

So when the plant's expansion has happened every quarter there were 15 complaints that were coming up. And initial evaluation on the slower than anticipated responses customer's complaints points to ineffectiveness of information sharing. So they are saying that no

people, people do not know about each other. So there is ineffectiveness on information sharing, that is a major problem that is coming up.

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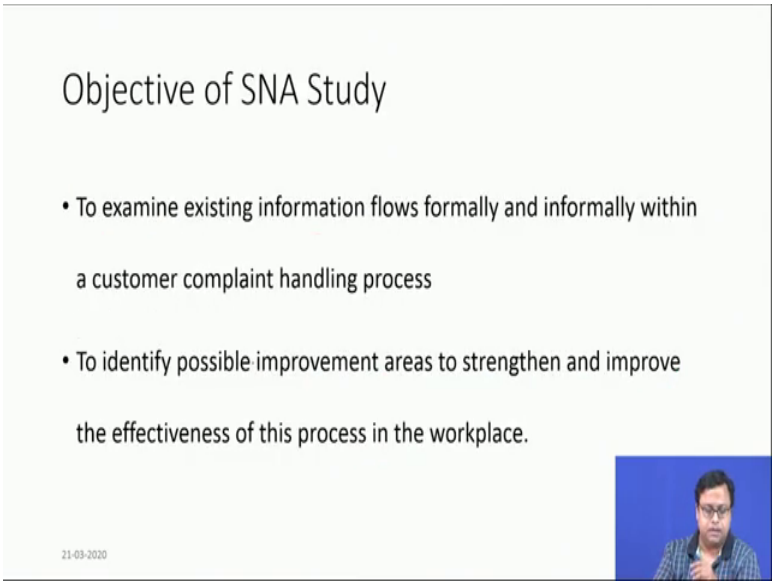

So how to solve this problem? These people, the officers run a SNA study. So the objective was to examine the existing information flow formally and informally within the complaint handling process. So the one that I told you is the formal process but there must be informal communication happening also.

So we have to find out what is that. And to identify possible improvement areas to strengthen and improve the effectiveness of the process in the workplace, fair enough? So it is a process improvement problem in a quality or customer facing kind of a situation.

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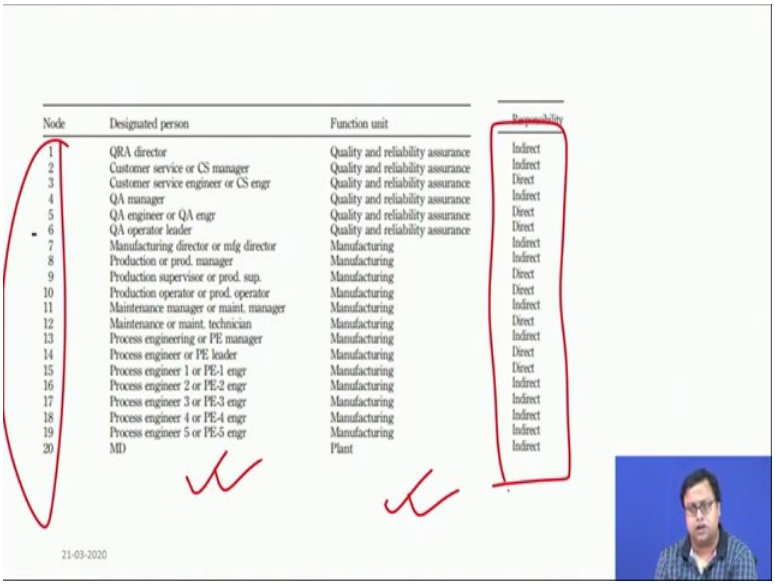

Node	Designated person	Function unit	Responsibility
1	QRA director	Quality and reliability assurance	Indirect
2	Customer service or CS manager	Quality and reliability assurance	Indirect
3	Customer service engineer or CS engr	Quality and reliability assurance	Direct
4	QA manager	Quality and reliability assurance	Indirect
5	QA engineer or QA engr	Quality and reliability assurance	Direct
6	QA operator leader	Quality and reliability assurance	Direct
7	Manufacturing director or mfg director	Manufacturing	Indirect
8	Production or prod. manager	Manufacturing	Indirect
9	Production supervisor or prod. sup.	Manufacturing	Direct
10	Production operator or prod. operator	Manufacturing	Direct
11	Maintenance manager or maint. manager	Manufacturing	Indirect
12	Maintenance or maint. technician	Manufacturing	Direct
13	Process engineering or PE manager	Manufacturing	Indirect
14	Process engineer or PE leader	Manufacturing	Direct
15	Process engineer 1 or PE-1 engr	Manufacturing	Direct
16	Process engineer 2 or PE-2 engr	Manufacturing	Indirect
17	Process engineer 3 or PE-3 engr	Manufacturing	Indirect
18	Process engineer 4 or PE-4 engr	Manufacturing	Indirect
19	Process engineer 5 or PE-5 engr	Manufacturing	Indirect
20	MD	Plant	Indirect

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So they actually find out who are this people, how many PE engineers, how many PE leaders, how many QRA, so this kind of, these are the nodes, their designation, their functional unit and the responsibility is direct or indirect, that has been written there. So whenever a problem comes up whether these guys are directly related, directly answerable or indirectly answerable.

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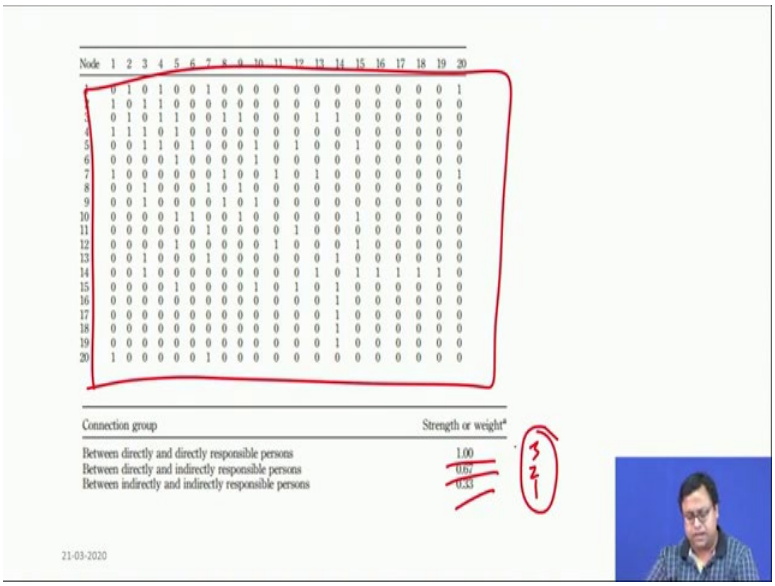

Node	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	1	0	1	1	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0
4	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	1	1	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0
6	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1
8	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
9	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
11	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
12	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
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18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
20	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Connection group	Strength or weight[a]
Between directly and directly responsible persons	1.00
Between directly and indirectly responsible persons	0.67
Between indirectly and indirectly responsible persons	0.33

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And then with these 20 people they also created a, 20 by 20 matrix where 1 means the connection group is basically 1, 0.67 and 0.33. 1 means between directly and directly responsible persons when two persons are directly related their connection strength is 1, the weight.

When directly responsible person is talking with a indirectly responsible person that connection weight is 0.67, and the rest is 0.3.

So it is saying that 3 is to 2 is to 1, that is the ratio. Now this is subjective. This they have discussed and found out that this kind of thing can be done.

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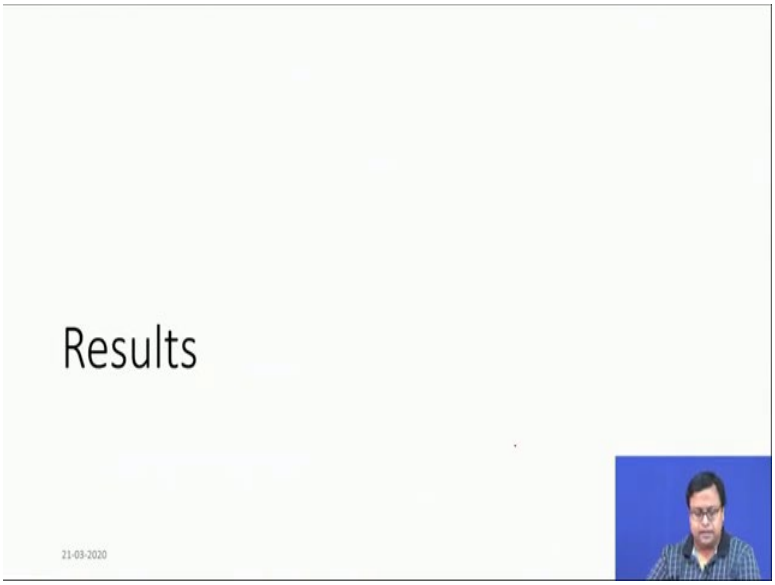

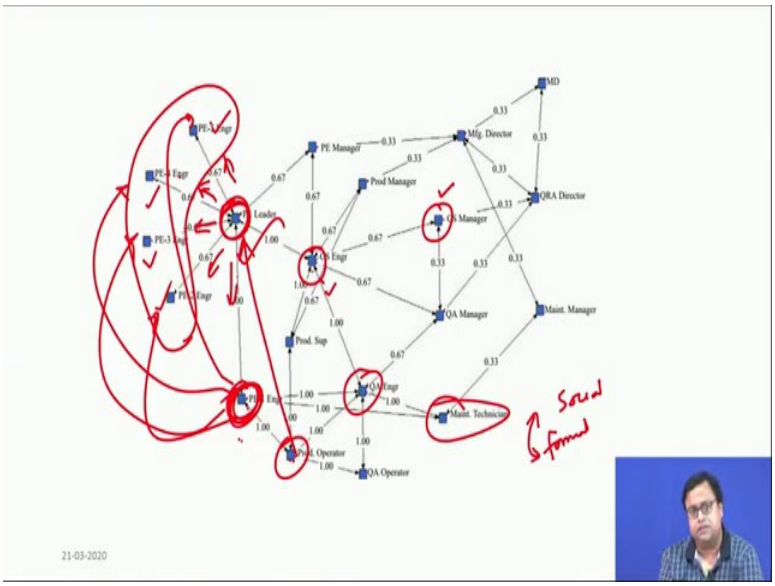

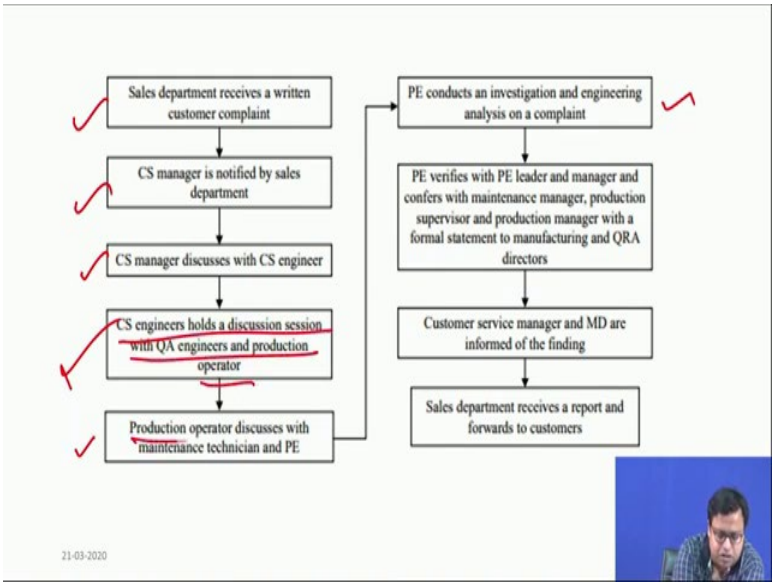

Now what are the results? This is the result that they have got from this particular figure. So you will see that the key person in this particular thing is the, so if you remember, unless the PE, it will go to the PE engineer and the PE engineer sends it to PE leader and PE manager and up so this is the PE engineers, and it starts with CS manager and then CS engineer then this.

So CS manager to CS engineer and CS engineer sends it to PE engineers they do not have any direct social connection. They have only formal connections in the information sharing process. They do not talk with each other. They talk with each other only with this PE leader that kind of a thing can be found out.

So if I get this information here and if I have to pass it to here and then to here and then it has to come to PE leader and etc then these PE engineers are not connected with anybody. Only one PE engineer is connected. All other PE engineers are not connected with either CS engineers are not connected or even they are not connected with, like say maintenance technician they are not connected with, other than this person, so at least this person should be connected with the other people.

That can be one way of dealing with, or you can bypass these people and you can directly give the information to PE leader and PE leader then can pass the information. Then the social and the formal information sharing methods will be in hand in hand. That is something that you have to check, that can CS engineer instead of giving information to PE engineer as it was told here, since it is hold a discussion with QA engineer and production operator and production operator discusses with PE engineer.

So basically then CS engineer goes to QA engineer here that is okay and production operator. Now production operator does a meeting with PE engineer but there is only one guy with whom he is connected. The other guys do not get any information and that is where the problem is.

So one way of doing it is probably make these 4 person connected with the whole network, we try to bring him, bring them or make them connected with all these people because they are creating problems or you, instead of giving this thing to PE engineer he can give it to PE leader and then PE leader can give the information to all these 5 persons. If that can happen then the distance or the problem in terms of the information sharing can come down.

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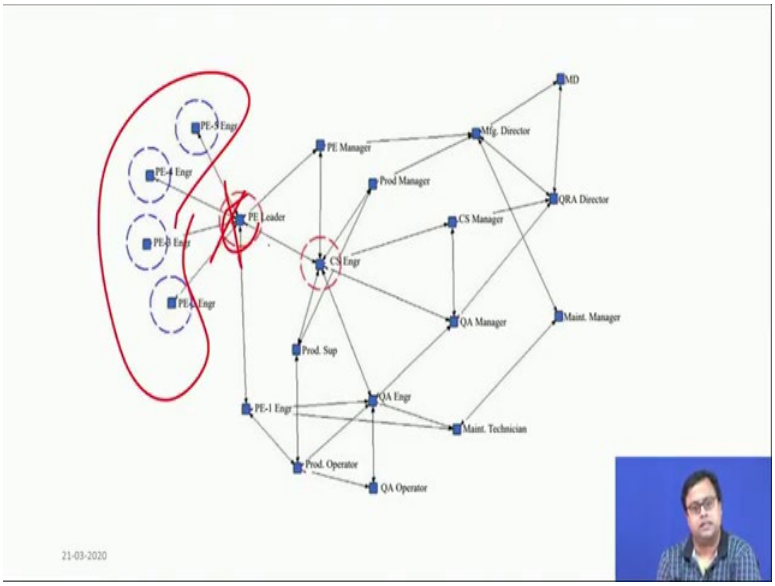

So who are the central persons here? Obviously the CS engineer and QA engineer, the central persons so they can be also, I would say incentivized to pass the information in a better way that can be also one way of dealing with.

Who is the structural hole? This PE leader basically is structural hole. If this person gets vanished, no other people will be able to connect. So this is very crucial person. So we instead of, so we should probably use this particular person in the communication strategy also.

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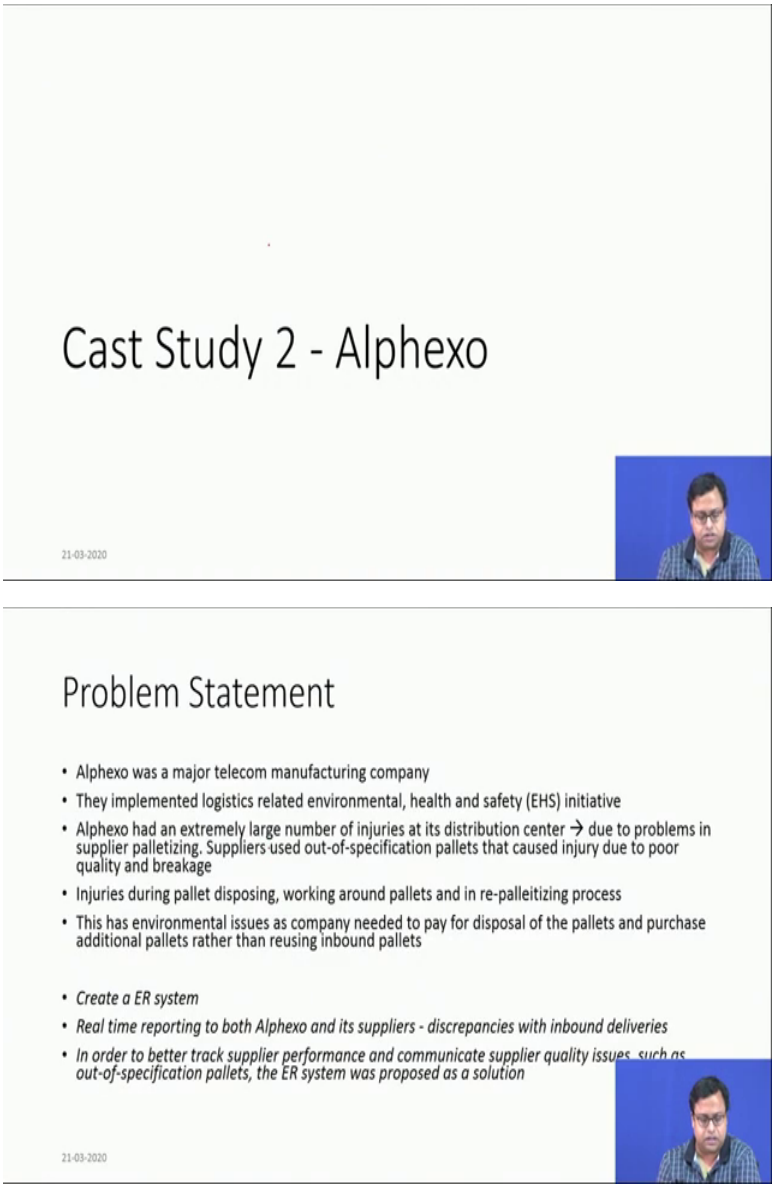

There is another case study, right, Alphexo. Alphexo was a major telecom manufacturing company. They implemented logistic related environmental health and safety initiatives. So Alphexo had an extremely large number of injuries at its distribution center due to problems in supplier palletizing.

Supplier used out-of-specification pallets that caused injury due to poor quality and breakage. Injuries during pallet disposing, working around pallets and in the re-palletizing process these injuries were happening. So question, what was the question?

They had to create ER system real-time reporting to both Alphexo and its suppliers. There were discrepancies with inbound deliveries and in order to better track supplier performance

and communicate supplier quality issues such as out-of-specification pallets the ER system was a proper solution.

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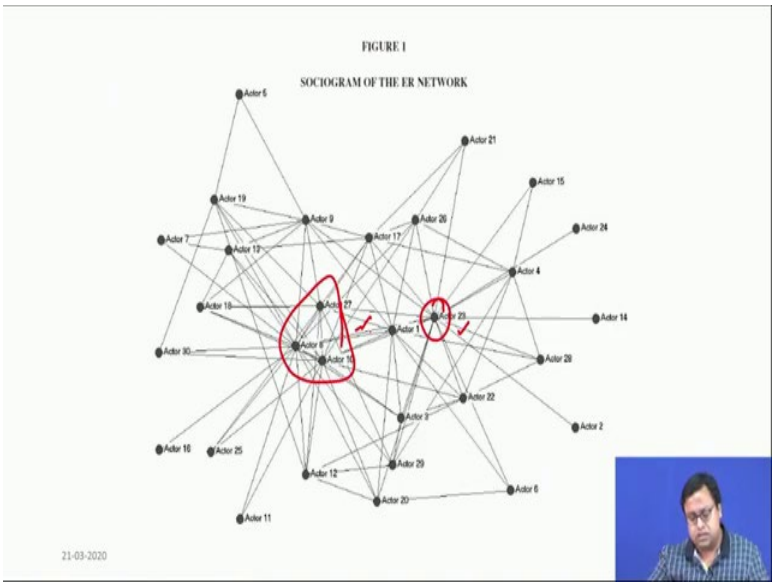

Now question is whether these guys will adopt this ER system or not, that was a problem. This was my actors and this is the network using the similar thing that they have adopted. My question was whom I can incentivize? Based on this particular picture can you tell me that whom I can incentivize to make sure that most of the people will adopt this ER system?

See one thing is this triad you see. This triad is highly connected with each other, fair enough? So any one of them you give, they are okay but this is another single person who is also connected with many people. So this triad and this person probably will be the persons

which are most crucial in this network to make people adopt a new technology. So this is something that I am trying to say.

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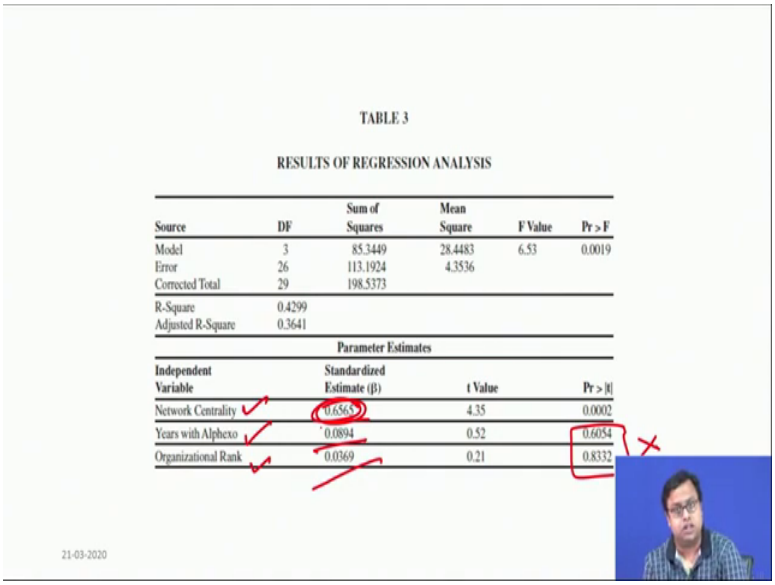

So they have created a model where they have found out that network centrality, years in Alphexo and organizational rank, this is something that they used to predict whether somebody is interested to adopt or not and they found that network centrality has a positive impact, years in Alphexo and organizational ranks does not matter that much, P is high.

So the major thing that is important is how central in the network you are, rather than your organizational, years of experience in the organization or loyalty with the organization or your position in this organization. So that is where I will stop in this thing.

So we have discussed 2 case studies, how this particular thing can be applied. In the next videos we will be discussing about how social network analysis can be actually implemented in the market to solve certain problems. So the codes and etc will come in the next slide. Thank you very much. I will see you in the next video.