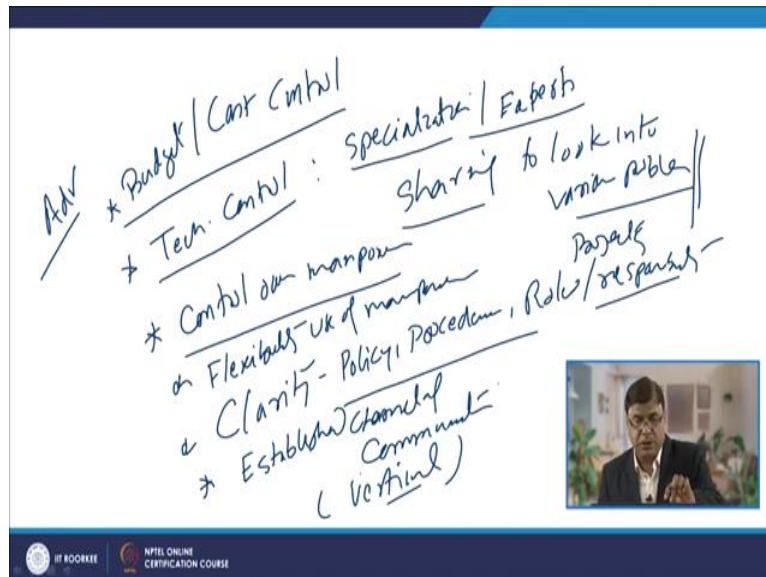


**Principles of Industrial Engineering**  
**With Prof. D K Dwivedi**  
**Department of Mechanical and Industrial Engineering**  
**Indian Institute of Technology Roorkee**  
**Lecture-07**  
**Organizational Structure: Types**

Hello, I welcome you all in this presentation related with the subject Principles of Industrial Engineering and in this presentation will be talking about the advantages, disadvantages of the classical organizations and what are the different types of the organizations, and having different kind of the structures as far as the allotment of the duties, responsibilities, authorities and accountability is concerned.

So, and the different types of the structures will be assessed with regard to their flexibility on account of the like the kind of control we have on the budget, the kind of the manpower control, the way by which communication across that different layers and functions will be taking place. So, these are the various factors with regard to which performance or the suitability of the organization is checked.

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So, as far as the traditional organizational structure is concerned in this case, the advantage is that the budget control, budget and the cost control is very good. Why because, there is a one top authority which decides how the different resources which will be allocated and it also has got a very good technological control. Like, in the organizations people are aware of the kind of the specialization which exists.

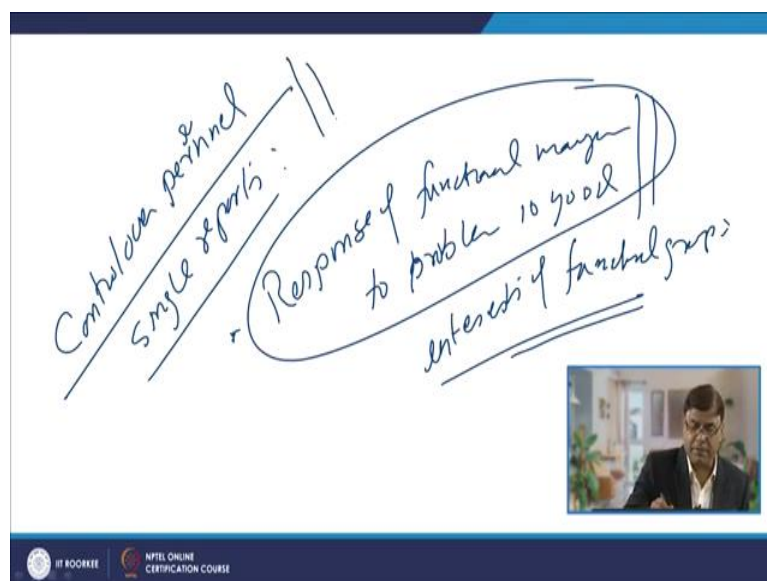
So, those specialized people or the experts, their knowledge is shared, actually the sharing of the knowledge is key here to look into the various problems and to look into the various on going projects, to address the issues related with the various projects. So, the knowledge base or the expert or the technical expertise which is available with the organization is very effectively used and that is why we also say that very close control over the manpower.

Here, the functional managers will have the authority to utilize the expertise and specialized expertise which is there, with a particular function it can be utilized for resolving the various issues, and the manpower can be deployed as per the need. So, that is the kind of control which is there in the classical organizational structures.

So, that is what we can also say that there is a flexibility regarding the use of the manpower. Then, since in this kind of the case hardly there is any change so the clarity exists, clarity with regard to the policy of the organizations, the kind of the procedures which exists, the kind of authorities which exists, the kind of the roles and responsibilities which will be there.

So, there is a clarity regarding the policy procedures and the roles to be performed by the individual positions. Then here, there are very established channels of communication. Channels of the communications are very clear and these are established, although these are the, most of the time these are vertical in nature.

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There is one more thing that the response. Response of the functional managers, response of functional managers to the problems and issues, problems is good but it is effected by the

interests of the functional groups. So, this is a kind of problem also the response is good if their interests are being compromised, their problems are associated with them, if the problems are associated with them then the response is good.

So, these responses to a great extent or the functional group depended, if the problems are associated with others they hardly care or they do not care much. So, these are some of the good things additionally there is also very good control over personnel. There, is reason behind that most of the time there is a single reporting which means the every worker will have to report to one boss. There is a single boss for reporting the progress or status of the work. So, that leads to have much better control over the personal and the manpower.

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Disadv.

- \* Nobody to fix responsibility for failure
- \* None to take responsibility of project
- \* Decision to functional group oriented
- \* Decisions are taken according to strong functional group
- \* Creatives/ideas

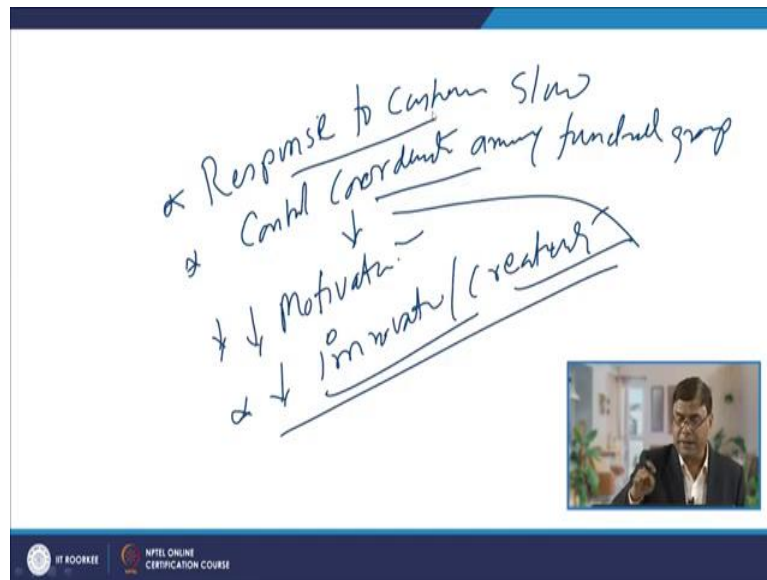
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As far as the disadvantages of the classical organizational structures is concerned, there are different functions and if any, if the failure in any project or any particular aspect takes place, then there is nobody to fix the responsibility, fixing the responsibility for failure is difficult in such kind of the structures. So, because there is no one to take the responsibility of project. So, we can say the projects are, there is no one authority responsible for success or for taking the project further.

So, no one takes the responsibility for the projects and if the problems occur then it is difficult to fix the responsibility for the failure of the projects. Most, of the time the decisions or functional group oriented. So, the functional groups keep their interest in mean while they, are giving their inputs during that decision making and decisions or and the way by which decisions are taken in that the functional groups or the strong functional groups dominate.

So, decisions are taken according to the strength of the functional groups which means, the group which is strong will dominate in the decision making and most of the decisions will be taken according to the interest of a particular functional group. So, the decisions are functional group oriented likewise creativity, ideas which are given or also the group oriented. So, this is these are few negative points associated with.

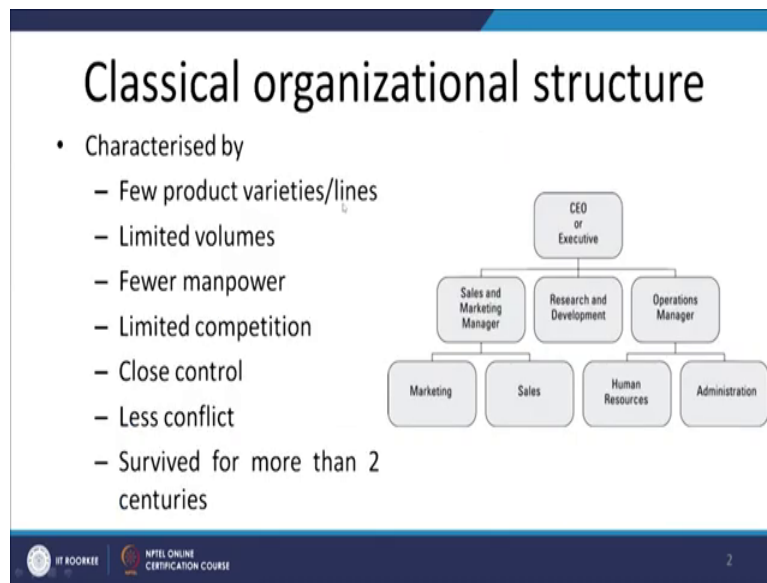
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Additionally few more negative points are there. The response to the customers in traditional, organizational or classical organizational structures, response to the customers is slow and the control, coordination, control and coordination among the functional group is very poor. So, poor coordination among the functional groups.

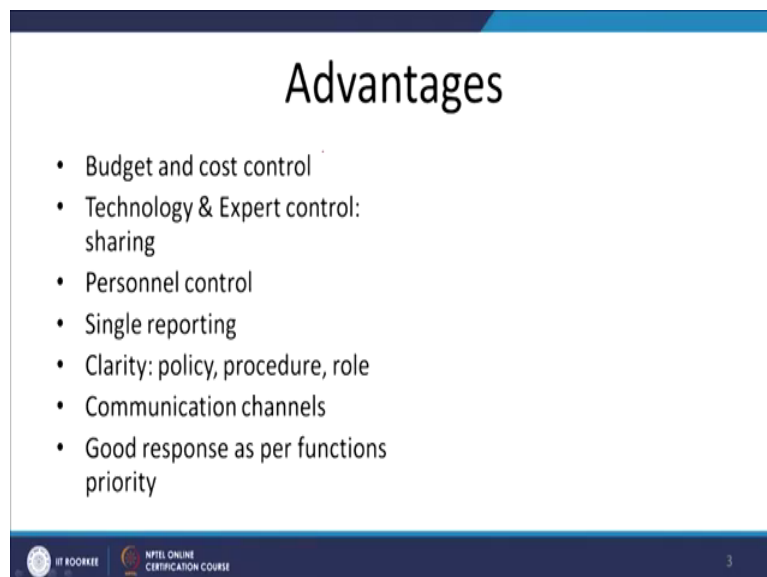
Then, the motivation for the individuals is less and that is why the innovations on part of the, innovation and the creativity in such kind of the structures, organizational structures is less. So, innovation, creativity, motivation all these things are less. Coordination is a problem, response to the customers is also slow and that is why it is required that the organizational structures should evolve.

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So, this is what I have said so far like classical organizations these are typically characterized by few product varieties. When the volumes were limited, fewer manpower, limited competition, these had a close control over the situations, conflicts were less and that is why these have survived for more than two centuries, and this shows the typical organizational structures.

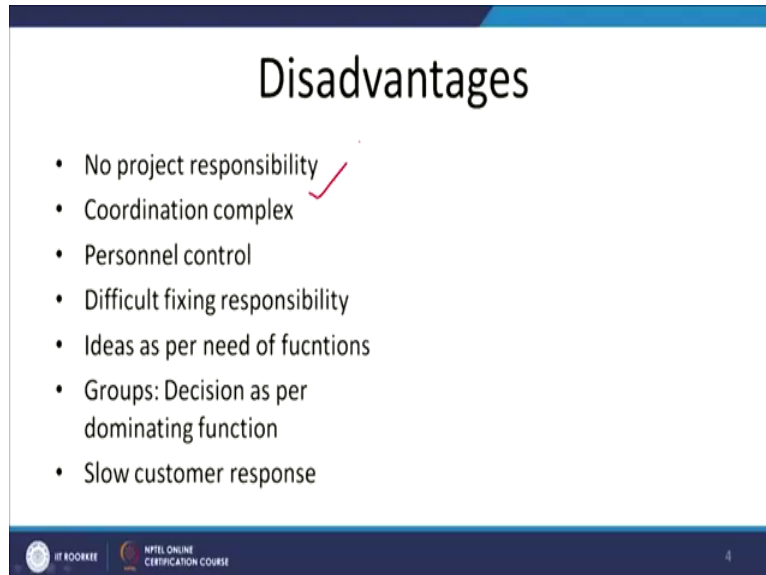
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So, if we see the kind of advantages the budget and cost control, sharing of the technology and expertise for the betterment of the organizational interest. Then, the personal control because of the single reporting, clarity in policies, procedures, and roles, good

communication channels are established, established communication channels are there and the response to the situations and the problems most of the time here in this case is governed by the functions priority.

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## Disadvantages

- No project responsibility
- Coordination complex ✓
- Personnel control
- Difficult fixing responsibility
- Ideas as per need of functions
- Groups: Decision as per dominating function
- Slow customer response

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On the other hand, disadvantages of the classical organizational no project responsibility, there is no one to who will take the responsibility of the project for its successful completion. The coordination is difficult, the personal control is also difficult because of the horizontal nature of the structure, fixing the responsibility for failure is difficult, ideas are mostly oriented in light of the functions requirement, and the decisions are most of the time dominated by the strong functional groups and the response to the customers is slow.

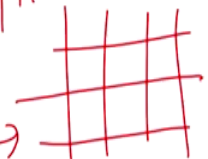
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## Types of Organizations

- Line:
  - Vertical
  - Authority delegation
  - Good Control
  - Less Specialization
  - Slow decision making

*Handwritten notes:*

- \* Line / Vertical structure
- \* Function / Horizontal structure
- \* Matrix



*Handwritten notes below the grid:*

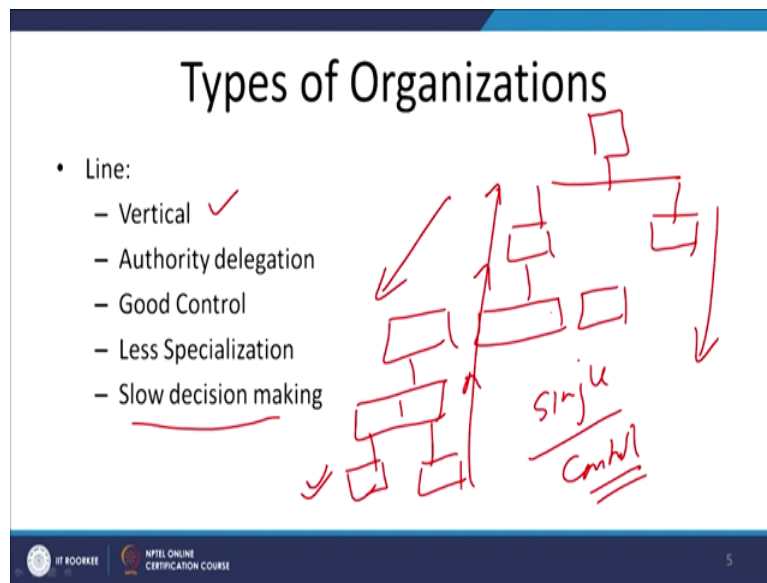
- a Sharing resource
- a Collaborative
- \* Project driven Ind.

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Now, if we see what are that different ways by which the organizational structures are developed, like there are three types of the organizations these called line organization having the vertical structure, then there is functional organization having the flat or the horizontal structure, then a combination of these two is also used which is called Matrix structure. So, like the vertical ones, and the horizontal ones when these two are combined it gives us the matrix structure.

So, in case of the matrix structures sharing of the resources and the collaboration is extremely crucial for success of this kind structure, and this kind of structure is mostly good for the project based or project driven industries and the organization. So, if we see the features of the typical line type of the organizational structure or line type of the organization.

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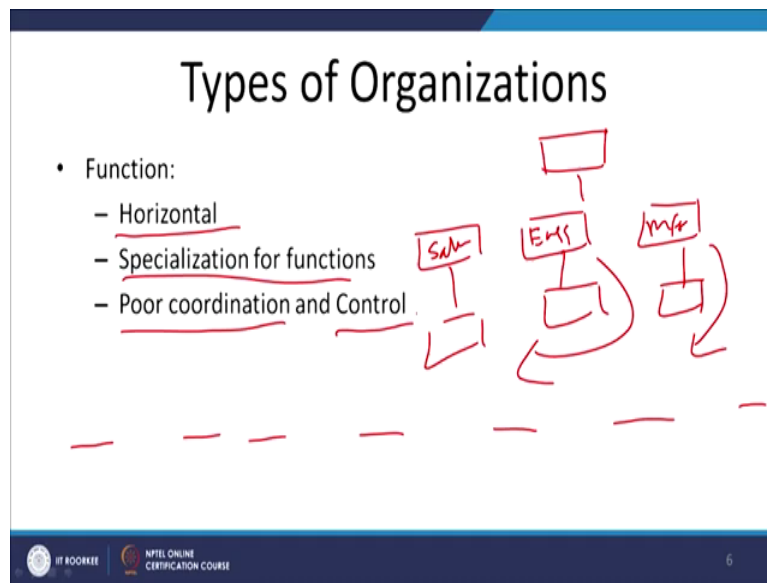


Here, what you will see it has the vertical structure which means, there are so many layers like this, of course each one will be having so many authorities and the responsibilities. So, number of layers are many here like this in a vertical structure, and for fast response most of the time the authority is delegated to the lower levels. So, that the decision can be taken in light of the set objectives and the goals of the organization.

In this, case mostly the reporting is single and the structure hierarchical. So, the control is good and the specialization is however less means, the manpower will be specialized in a very small aspect of any work and the use of the specialization across the functions is very less. Decision making, in this case is slow primarily because of the presence of so many layers in this kind of the vertical or hierarchical structure.



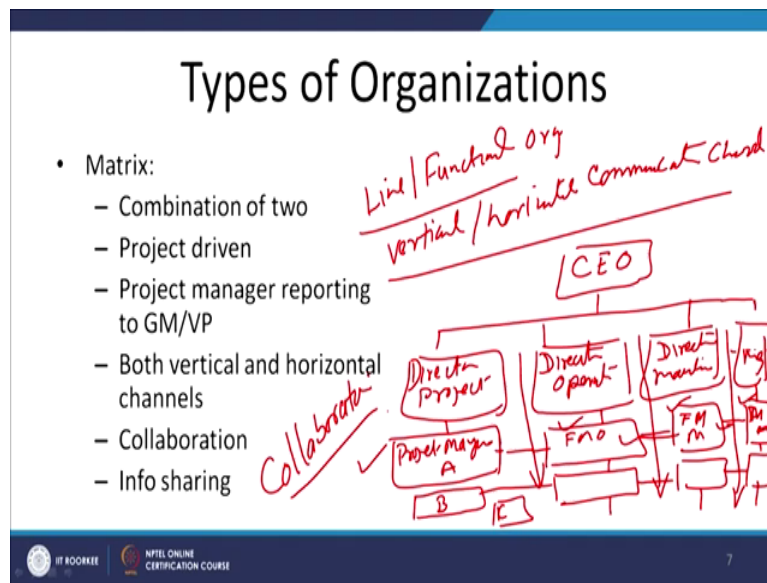
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Then, the functional structure this is also called horizontal one where number of layers are limited like this one, two, three, different functions and may be here that is it number of layers are very limited that is why it is called horizontal structure, and each one will have one like this is sales, engineering, then manufacturing. So, each one will have specialization in a particular area.

So, the specialization for the functions exists and this specialization can be used across the organization to look into the various aspects but since the organizational structure is horizontal so many groups, so many functions are there at the same level, that is why the coordination and the control in this kind of structure is somewhat poor.

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Then, the matrix organizational structure. In case, of the matrix organizational structure the good point of both line and the functional organizational structure are exploited. So, here it will have both vertical as well as horizontal communication channels, vertical and horizontal communication channels. So, what happens like the top organization like CEO and then there are the director projects, then the director operations, director maintenance.

So, for each functional group there is a director. So, these are the specialized functional groups in their own field, likewise there can be number of other functions and then likewise there can be manufacturing. Now, these specialized services of these specialized functional groups are utilized for number of project. So, project manager for product A. He will be responsible the way by which the manufacturing, quality control, dispatching sales, marketing, each and everything is being governed, and the way by which it is going on.

So, the project manager for product A will be responsible for its success, and the project manager A will directly be reporting to the project director. Likewise, for product B, product C, so there can be number of product, there can be number of projects, project A, project B, project C, and all these projects will be utilizing the services, expertise of each of these functions.

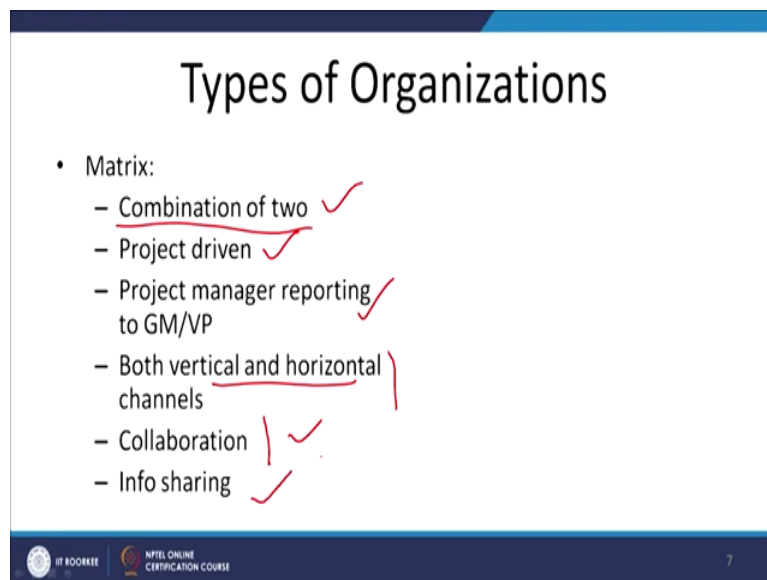
So, here we can see there are the vertical channels like this, because each project manager has to collaborate with the functional managers of other functions. So, functional manager operations, functional manager maintenance, functional manager manufacturing, project

manager will be interacting and collaborating with each of these functional managers for smooth flow of their project or of their product.

So, here we can see there will be the director for each of functions and the functional managers, supervisors, etc., and they will be interacting with each other. So, there will be the vertical channels in each of the functions and horizontal channels when the each of the project manager, project manager for each of the project is interacting with the different functional managers, different functional supervisors.

So, there will be presence of the vertical channels as well as the horizontal channels and that is how it will be leading to the effective collaboration and utilization of resources for success of the project. In this, case the expertise is shared and there is a project manager for each project responsible for success of that particular project.

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The slide is titled "Types of Organizations" in a large, bold, black font. Below the title, there is a bulleted list describing the Matrix organization type. The list items are: "Matrix:", "Combination of two", "Project driven", "Project manager reporting to GM/VP", "Both vertical and horizontal channels", "Collaboration", and "Info sharing". Each item is preceded by a red checkmark. The slide has a blue header and footer. The footer contains the NPTEL logo, the text "NPTEL ONLINE CERTIFICATION COURSE", and the number "7".

- Matrix:
  - Combination of two ✓
  - Project driven ✓
  - Project manager reporting to GM/VP ✓
  - Both vertical and horizontal channels ✓
  - Collaboration ✓
  - Info sharing ✓

So, if we see the advantages of the matrix type of the organization. It is the combination of the two line and the functional organization. It suits for the project driven organization and industries, each project manager reports directly to the higher authority like director projects or the vice president or general manager, there is a presence of the vertical and horizontal channel and the both projects managers will have to collaborate with the that different functional groups and information sharing is crucial for success of this kind of the organizational structures.

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## Need for change in Organizations

- Due to rapid change in
  - Technology ✓
  - Market position ✓
  - Increasing demand from stake holders ✓
  - Increasing varieties
  - Multiple product lines
  - Integration of technology

*New models ✓*

*New Tech ✓*

*Wide range of quality / Price ✓*

*Change in mgmt. style*

*Better quality / feature*

*↑ Quality    ↓ low cost*

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Now, we will see why there is a need for change in the organizational structures. So, if we see as compared to the earlier days things are changing very fast. We are getting the new models almost every day which are loaded or equipped with the newer technologies and in each product category there is very wide range, very wide range of quality and the price. So, newer models, newer technologies variety of, for each type of the product there is huge range of the variety with regard to the quality and the price.

And since all these things are changing very fast, change is very fast. So, any model does not remain in the market for long. So, they will have to update, they will have to change themselves. So, to deal with these fast changes in terms of the technology, in terms of the market position, since the models are changing. So, the old models, nobody will be buying the old models. So, the demand for the old models will be changing or reducing. So, the market position for the older things is getting reduced.

So, the market conditions, demand for the products and services is changing very fast. Increasing demand from the stake holders means, they are looking for the better and better quality, features in the product and that is why the demand we say that the demand from the stake holders, demand from the customers is increasing they are asking for more while, paying less and this is putting in lot of pressure on the organizations to come out, to deal with the challenge of the increasing quality requirement at low cost.

So, the old organizational structures were not able to deal with these kind of the dynamic market conditions. Earlier there were just one or two or three product lines in each of the organizations. Now, since with the increase of the variety, reduction in numbers, number of units in each variety or in each model. There is a increasing variety requirement, large number of the product lines exists to deal, to provide the variety in that different categories.

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**Need for change in Organizations**

- Due to rapid change in
  - Technology
  - Market position
  - Increasing demand from stake holders
  - Increasing varieties ✓
  - Multiple product lines ✓
  - Integration of technology

*Handwritten notes in red:*  
Integrate technology  
New Product  
Abs. Tech  
Fast response

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And that is why there has been a huge integration of the technology. So, like various varieties, number of product lines, and all these are integrated through the technology and to deal with these things it is required to have that different kind of approach for developing the newer product, for absorption of the technology in the organization, fast response to the customers, this is need and if the structure of the organization is not designed to deal with these requirements of the market then organizations will go off the market, means they will vanish, they will be not able to survive in the market. So, these are the factor which are forcing the organizations to go for a change.

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## Challenges and need for change

- Growth of organizations lead to increased
  - integration of activities ✓
  - Inter-group/ departmental interactions ✓
  - Conflicts ✓
- These caused problems in formal & informal communication channels.
- These resulted in need for change in organizational structure

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So, this also says if we do not change then what are the problems? The growth of organizations has led to the increased integration of the activity so many departments and the functional groups increasing conflicts, that is why there is need for revision, improvement and the change in the organizational structures and because of these, these have caused the problems in formal and informal communication channels and have resulted the need for change in the organizational structure.

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## Futuristic Organizational Structure

- Response to the customer ✓
- Short design to market cycle ✓
- First time quality ✓
- Personalised customer service ✓
- Absorption of newer technologies ✓
- Creative and innovative ✓
- Expected delivery ✓

New Product / Variable



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If any organizational structure is to be change then what should be kept in mind like, let us have the people roles, responsibilities and authorities in such a way that response to the

customers is fast. Whenever there is a complaint, whenever there is a adverse review regarding the product and service, that is addressed appropriately. So, that in future customers are not dissatisfied with the product and services of the organization.

Then short design to market cycle which means, since the designs are changing very fast, market conditions are very dynamic, there is a demand for the newer products, large number of the varieties and each product and the variety is not able to survive for long. That is why whatever newer designs are being developed they must be launched in the market, they must be made available in the market in the shortest possible time.

So, sort design to the market cycle is to be there. First time quality we do not get much time because the duration for which a product which will survive in the market is very short and because of that whatever we are making it must be made of the required quality. So, that it is able to have the grip in the market and it can get established. So, it is important that whatever is being made in first time itself it is having the requisite quality to appeal to the customers, and whenever we get the negative feedback about that any new product then it loses its shine.

Then, personalized customer service so that even if there are issues those can be addressed as early as possible, and absorption of the newer technologies because, things are changing very fast, technologies are changing, products are changing and the varieties in which the number of units to be made are also increasing. So, this is possible through the absorption of the newer technologies. Need to be creative and innovative.

So, that it can really match with the imagination, or it can over match with the imagination of the customers, and deliver the things on time as per the need otherwise, despite of having everything fine good quality, low cost but if things are not delivered on time then also the customers get dissatisfied. So, these are some of the things which organizational structure should look for a while designing the organizational structures with regard to the retention of the customers having the increase in demand of the product and having the good grip in the market.

Now, I will summarize this presentation, I have talked about the three types of the organizational structures like line organization, functional organization, and the matrix organization and what kind of the features should be there in a typical futuristic organizational structure. Thank you for your attention.