Principles of Management
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Lecture – 08
Evolution of Management – IV

Taking discussion on Evolution of Management further; we would discuss today the quantitative perspective of management. We will discuss where it is applicable. In quantitative approaches to management, there is a use of science or operations research or mathematical modeling, mathematical and statistical models.

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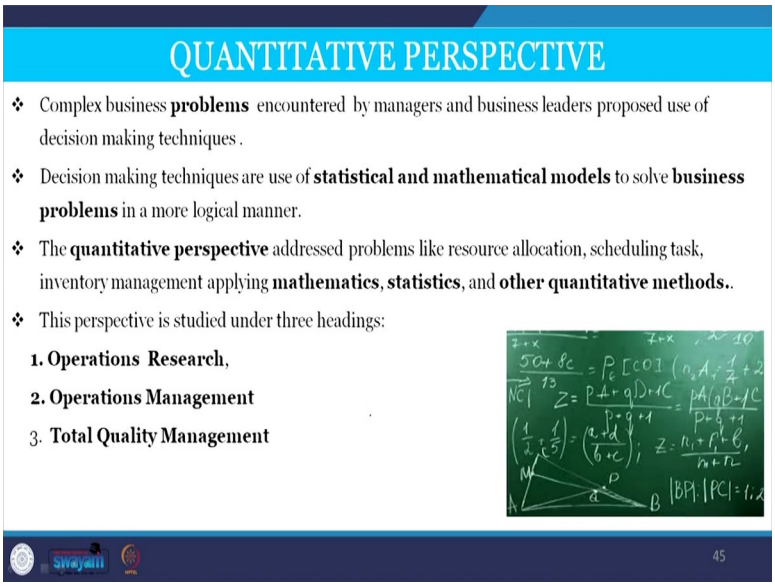

So, as business organizations come across complex business problems and it becomes difficult for managers to predict and provide a solution. So, therefore, to deal with complex business problems, managers and business leaders proposed use of decision-making techniques.

The decision-making techniques use statistical and mathematical models to solve complex business problems in a more logical and rational manner. These techniques addresses problems like resource allocation etc.

Now, let us discuss about what are the problems the business organizations encounter. The problems like allocation of resources, scheduling of task, managing inventory. So,

these can be used by or the there should be proper allocation of resources, scheduling of task using mathematical models, statistical models, and other quantitative methods.

So, the various approaches used in the quantitative technique are: operations research, operations management, and total quality management approach.

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Broadly, we will discuss about the quantitative perspectives of operations research, operations management, and total quality management.

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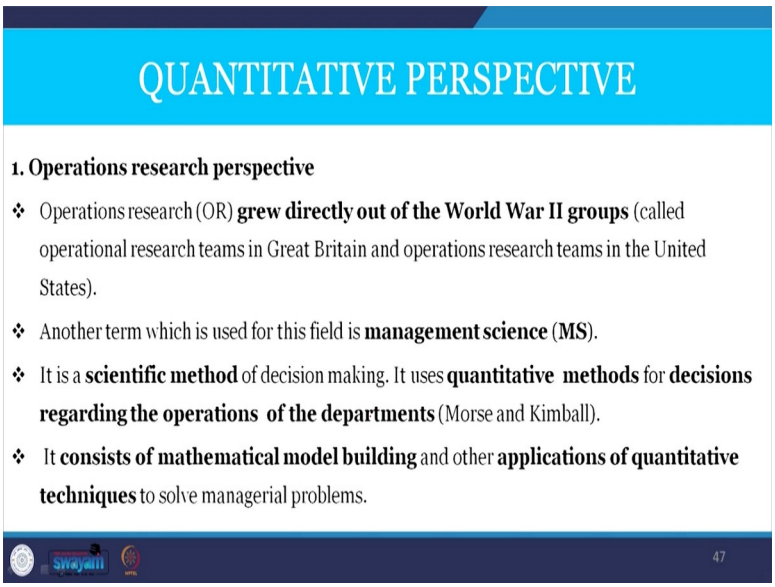

Operations research perspective: Operations research (OR) gives direct overview of statistical models, statistical and mathematical models, or a management science perspective to management. This OR perspective grew directly from the World War II groups called operation research teams. Another term which is used is called the scientific methods in decision making.

It uses quantitative methods for decisions regarding the operations of the department, managing various processes within that departments. It consists of mathematical model building and other applications of quantitative techniques to solve managerial problems.

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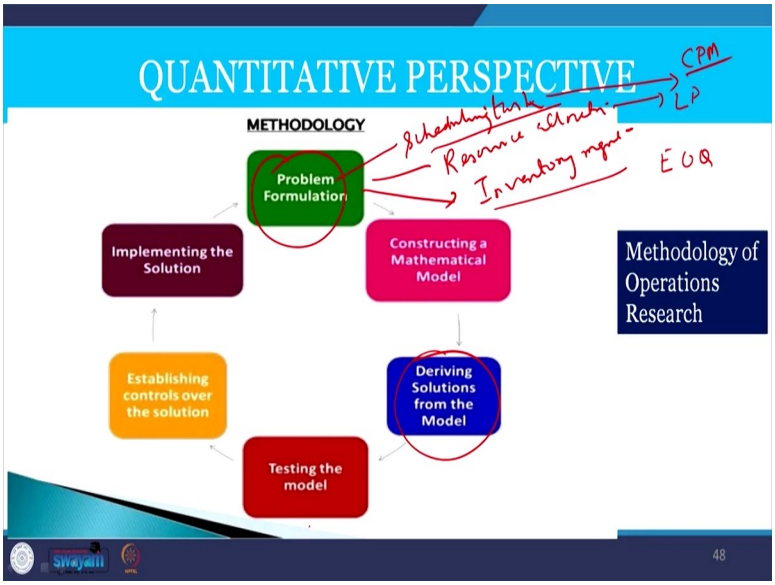

So, overall the methodology used is problem formulation identification of the business problems. Constructing a mathematical model for deriving solutions from the model and testing the model, establishing control over the solutions and implementing the solutions.

The problem formulation stage: As discussed earlier, the business problems can be regarding scheduling of task or there can be issues of resource allocation or inventory management.

So, these problems need solutions and the solutions need to be logical for scheduling of task or resource allocation. Resource allocation can be mathematical approach which is called linear programming method.

Then, scheduling of task can be done through critical path method; analysing which path is most viable or which is most preferred path in order to manage the resources as well as optimally utilize time. The techniques used are inventory management and economic order quantity method.

So, these are various methods through which the problems or the problems need to be formulated first, constructing a mathematical model and then deriving solutions from these models and testing the model, establishing control about the solutions and implementing solutions.

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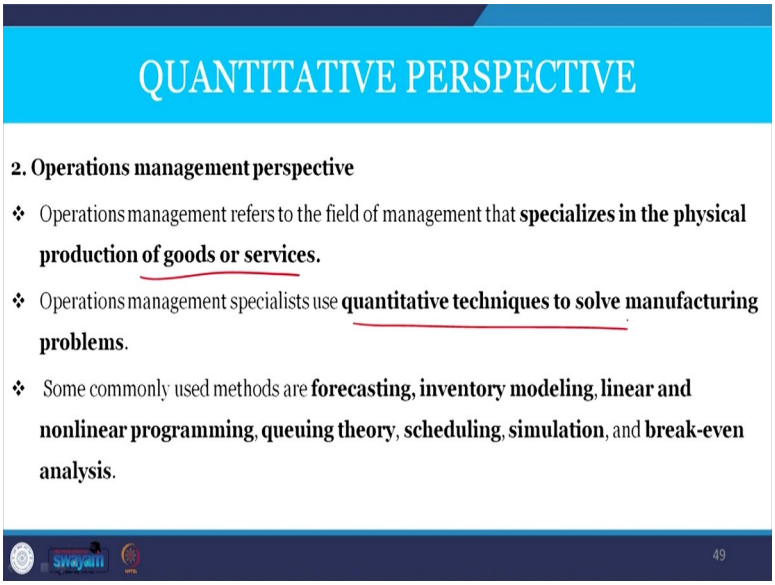

Operations management perspective refers to the field of management that specializes physical production of goods or services. Operations management specialist use quantitative techniques to solve manufacturing problems. Some commonly used methods are demand forecasting, inventory management or inventory modelling, linear and nonlinear programming, queuing theory, scheduling simulation and break-even analysis.

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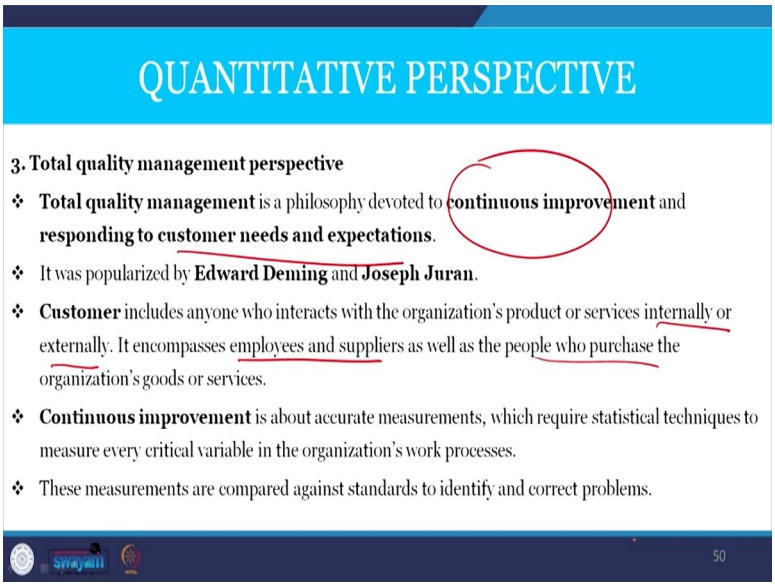

Total quality management perspective is the third approach of quantitative perspective. Total quality management is a philosophy devoted to continuous improvement. The main focus of total quality management is continuous improvement of products as well as processes and responding to the customers' needs and customers' expectations. This concept was proposed by Edward Deming and Joseph Juran, and this was further adopted by almost all the progressive organizations.

Customers according to total quality management include anyone who interacts with the organizations' products or services, who consumes the products and services; these are also the internal or external customers. An internal customer are the employees of the firm; it encompasses all employees and suppliers as well as the people who purchase the organizations goods or services.

Continuous improvement is about use of measurement techniques which require statistical techniques or statistical modelling to measure every critical variable in the organization and improve existing work processes. These measurements are compared against a benchmark or the standards to identify and rectify problems or correct problems.

So, features of total quality management as proposed by Edward Deming: intense focus on customers.

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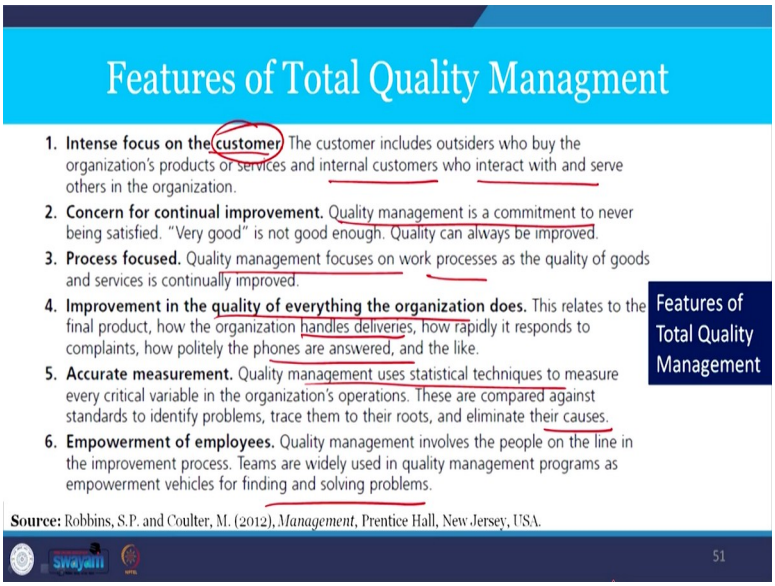

So, customer focus is the main objective. The customer includes outsiders who buy the organizations products or services as well as the internal customers or employees who are working for the improvement for performance of organizations who interact with and serve others in the organization. Concern for continuous improvement; continuous quality improvement; quality management is commitment to never being satisfied.

So, this philosophy says that in order to be more competitive an organization should never be satisfied with a present status quo. Very good is not enough; so, you need to continuously improve the quality of products and services offered by the organizations. Quality can always be improved and there is always a scope for improvement.

Process focused. Quality management also focuses on various processes; work processes as the quality of goods and services is continuously improved. Improvement in the quality of everything in the organization and everything that organization does. This relates to the final product, how the organization handles deliveries, how the employees respond to the customer complaints and how politely the phones are being answered.

So, it is not just improving the products, but also managing the processes when the product is being delivered. Accurate measurement: Quality management uses statistical techniques to measure every critical variable in the organizations' operations. They are compared against the benchmark to identify the present problems, trace them to their

root or identify the root cause of the problems and eliminate the problems or the causes of those problems.

Empowerment of employees. Quality management also involves the people on in the line in improvement process. Teams are widely used in quality management programs and empowerment vehicles for finding and solving problems.

So, quickly let us take a look at the major features of total quality management, customer focus, continuous improvement, improvement in quality of everything that organization does right from the product, services, processes, manufacturing and also when the product is delivered; how the employees respond to the queries of customers.

Accurate measurement: Use of benchmarks and improving the products as well as the processes. Empowerment of employee; employee empowerment. So, that they can solve problems and identify the root cause of the problems. So, this was all about total quality management perspective.

Application: Now let us come to the conclusion whether these principles are applicable; where are these applicable; the application of quantitative management perspective used by major corporate houses in queue management, the science of keeping lines moving.

So, quantitative management techniques: the statistical methods and the mathematical models are still used in contemporary organizations for effective management of various processes and in order to respond to the customers and to keep the customer satisfied. So, examples of customers at Whole Foods, a US based supermarket, are finding that their waiting time are shorter than what is expected.

So, the application of science in management is important to address complex business problems. Quantitative approach contributes directly to management decision making.

It improves the decision making; it fastens the decision-making processes in areas of planning and control examples, managers make budgeting decisions, resource allocation decisions, queuing, scheduling, production planning and quality control and similar such decisions by application of various quantitative techniques or methods.

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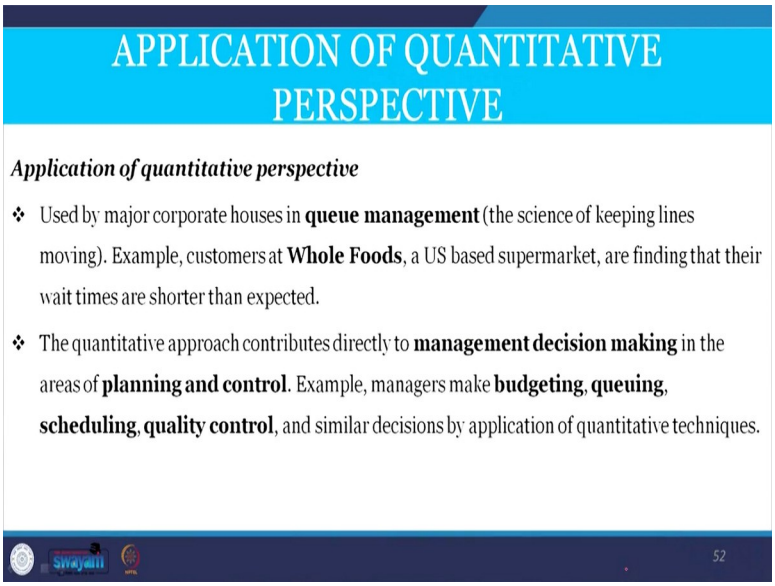

The next we are we will focus on the fourth perspective of management which is called contemporary perspective which is applicable till today.

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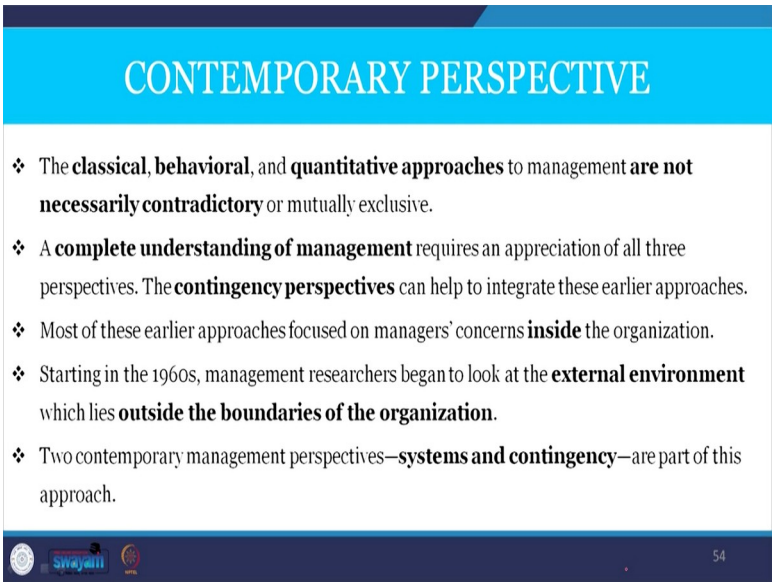

The classical, behavioural and quantitative approaches to management are necessarily contradictory or mutually exclusive. A complete understanding of management requires an appreciation of all three perspectives. The contingency or the situational perspectives can help integrate these earlier approaches. Most of the earlier approaches focused on managers concern inside the organization.

However, contemporary or situational perspective or contingency perspective emphasises on the role of external environment or role of environment on organization which lies outside the boundaries of organization. Two contemporary management perspectives are systems and contingency approach.

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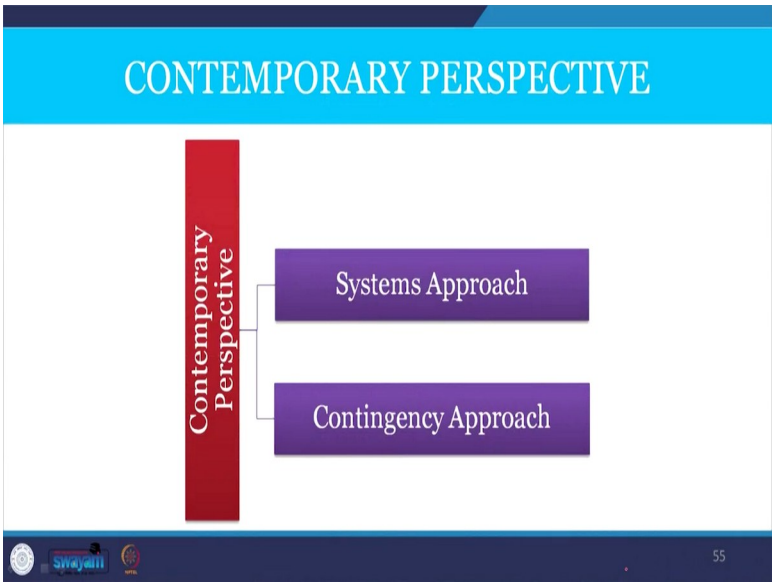

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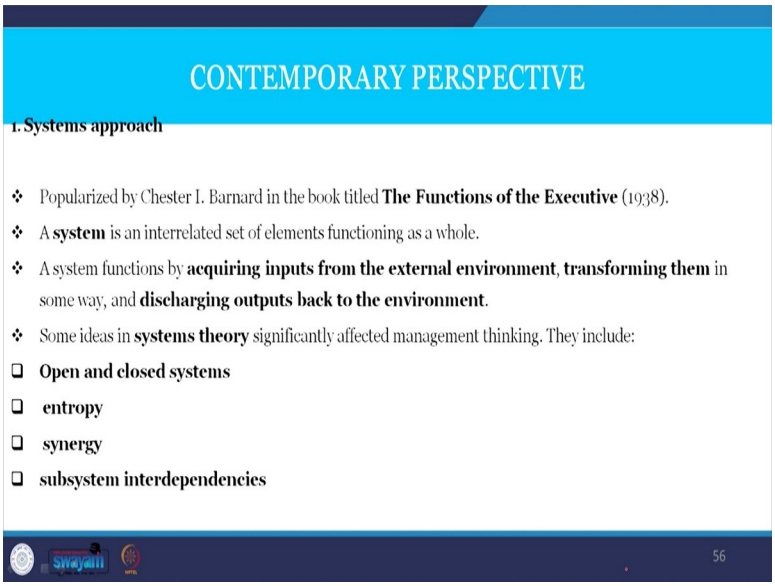

We will focus on the systems approach first. What is a system? Popularized by Chester Barnard in his book *The Functions of the Executive* in the year 1938. System is an interrelated set of elements functioning as a whole systems; view emphasises on acquiring inputs from external environment, transforming those resources into finished goods and discharging those products back to the environment.

So, systems view emphasises on three aspects: one is input, another is process and lastly, output. Input in terms of resources drawn from the external environment, processed

through various processes in the organization and the finished product is meant for consumption by external environment.

So, there is an inter relationship and interdependencies of all these processes. A system of interrelated set of elements which are functioning as a whole or as a unified whole. Some ideas in systems theory significantly affected management thinking: they include open and close systems, entropy, synergy subsystem and interdependencies.

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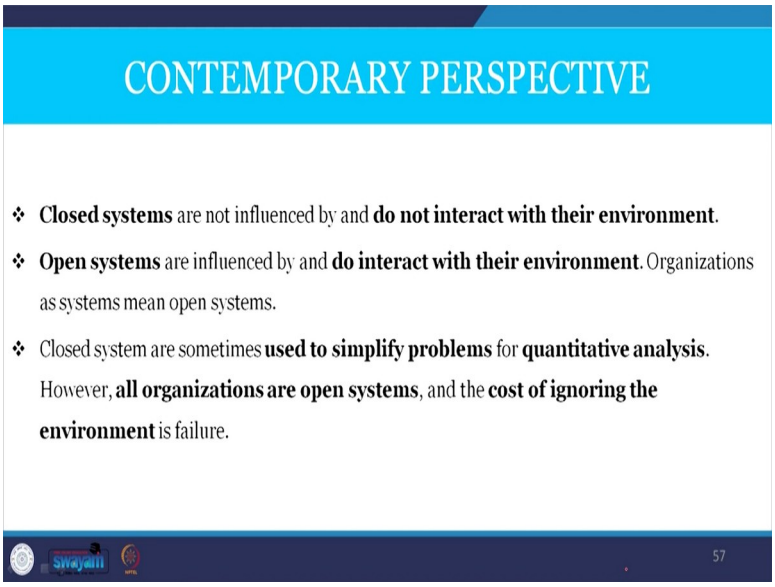

Close systems are not influenced and do not interact with environment; whereas, open systems are influenced and they interact with external environment organizations. Close systems are sometimes used to simplify problems for quantitative analysis; however, all organizations are open systems and cost of ignoring the environment is a failure of organizations.

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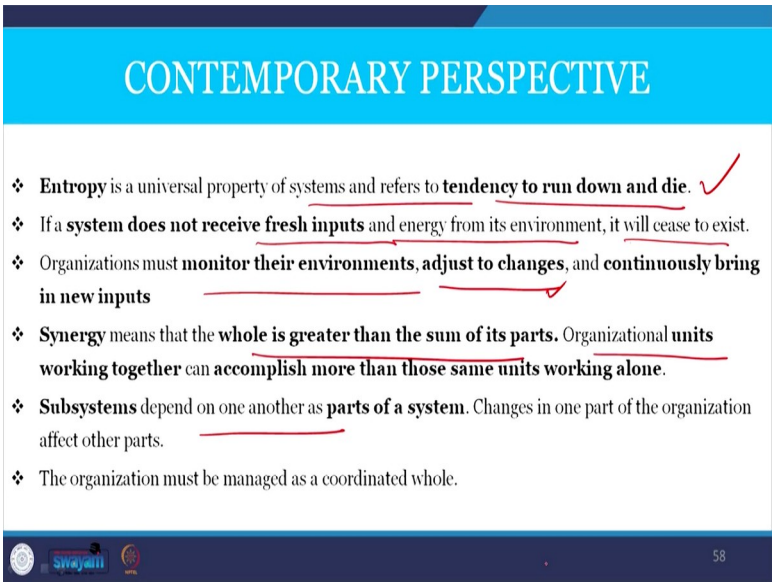

Now, let us discuss about what is entropy. It is a universal property of systems and refers to tendency to run down and die. Any system has a limited lifespan. So, entropy emphasizes systems that have a tendency to run down and decline or die. If a system does not receive fresh inputs, it will eventually die.

So, it emphasizes that a system draws input from external environment inputs and energy from its environment in terms of land, in terms of resources human resources, in terms of raw materials, finance and it will cease to exist if there is no fresh input.

So, organizations must monitor their environment. Organizations need to respond or need to draw resources from environment and adjust to the changes which are required by the changes in the external environment.

So, if an organization, say, for example, an organization 10 years back, had a different business environment. So, need for the inputs were different, the processes handle those inputs in a different manner; the finished goods were released in the external environment. So, if an organization is not responding to the needs of external environment, it will become non-existent.

Say for example, if the customer demand changes with competition; with advent of information technology, the costumers needs and preferences are changing. The advent

of new technology with lot of competitive pressure in a particular industry, there are different options or choices available for customers.

So, if the feedback is not taken by the organization and it is not adjusting to the changes in the business environment. So, the organization would decline or would run down and die.

So, it is likely to face death or decline. If and whereas, on the other hand, if an organization is continuously responding to the changes in the business environment. It is responding to the environmental dynamism and continuously brings fresh inputs or fresh ideas, it is learning and developing. So, there the organization would remain or maintain its continuity and order.

Synergy means that whole is greater than sum of its parts; no organization can work in silos, there is always an interdependence between different processes. So, there is a synergy or coordination between all the related parts. All the parts in an organizational units or departments work together to accomplish more than those of the same units working alone.

So, no unit can function alone; rather, there is an interdependence of various departments and units in order to maintain or in order to improve its existing performance.

Subsystems, the various subsystems of a larger system depend on one another as parts of a larger system. Changes in one part of the organization affects the other. Say, for example, with changing goals, as the organizations face different business situations and different environmental problems. So, different challenges and their goals cannot remain the same. The goal of organization at the time of introduction is different. Organization intends to be visible in the market intends to innovate.

So, this will have an impact on the structure of organization, the management style will have an impact on the recruitment and selection processes. So, every change in one of the organizational units affects other parts of the organization. Changing technology will also influence the structure of an organization, the management skills, the skills of employees, the management style and so on.

So, concludingly, we can say that subsystems depend on one another as part of the system and change in one part of the organization affects other parts. The organization must be managed in a coordinated whole. So, there must be interdependence, coordination and cooperation between several elements of the system larger system.

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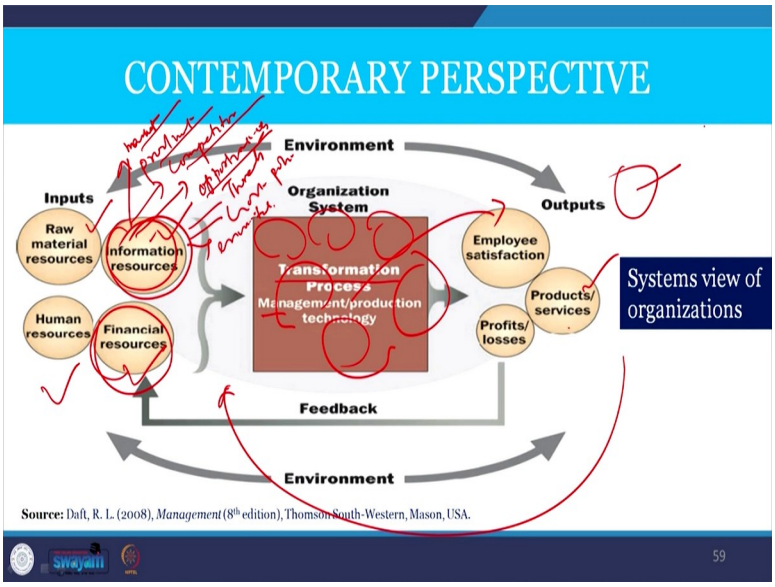

Contemporary perspective: if we take a view at this particular diagram. The resources drawn from external environment are raw materials, information, finance and human resources.

So, information regarding the market, information regarding how the market is responding, regarding the products and its performance, regarding competitors and competitors, product and opportunities in the market, the threats in the market and opportunities. So, all these government policies regarding environmental issues.

So, all these information's are specific to the organization. So, information from the environment is an input to the organization and there is a transformation process through which the way these resources are transformed or produced manufactured.

So, management, production, technology; management process, production process and the technological process within the organization help in transforming these products into finished goods.

The finished good is released in the external environment. The products and services are released in the external environment. The feedback from the external environment is continuously taken by the organization in order to improve the existing processes.

So, what we have understood from the systems view. Systems view consist of input, process, and output. Input is the raw material which are required for production or manufacturing. Information like the market related information, product related information, competitor's knowledge or competitor related information, opportunities in the market or threats in the market, government policies.

Knowledge about government policies, knowledge about environmental policies issues and so on need to be procured by the organization in order to effectively address the issues as well as help in improving the manufacturing of the goods or services and help in improving the existing goods and services of the organization.

So, organizations finished products remain to be released in the external environment which are to be consumed by the consumers. And so, how the organization addresses all these issues in an integrated and interdependent manner is about the systems view.

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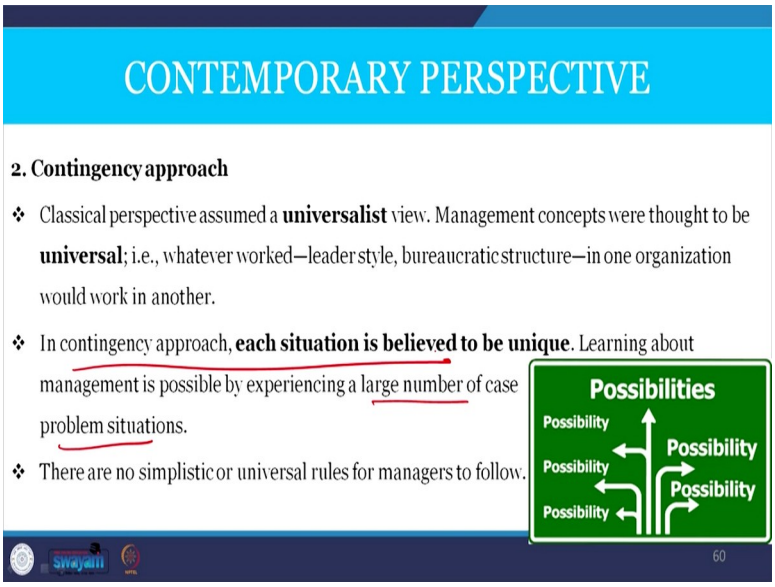

Contingency approach: classical perspective assumed universalist view; that means, management concepts were universally applicable. Whatever worked, say, leadership style or bureaucratic structure in one organization would work in another as well.

The overall classical perspective or scientific management and administrative theory have given a universalistic view of management assuming that management views are management concepts applicable in all organizations in a uniform manner.

Whereas, contingency approach gives a different perspective, gives a different view. It pursues that each situation or environment for all organizations are different. Each organization encounters a different type of situation and situation is believed to be unique to an organization. Learning about management is possible by experiencing a large number of situations or problem situations. There are no simplistic or universal rules for managers to fallow.

So, contingency approach emphasises of situation-based analysis. It says that every organization encounters a different situation. So, the principles of management or management concepts cannot be universally applicable and they need to be applied as per the situations encountered by the organization.

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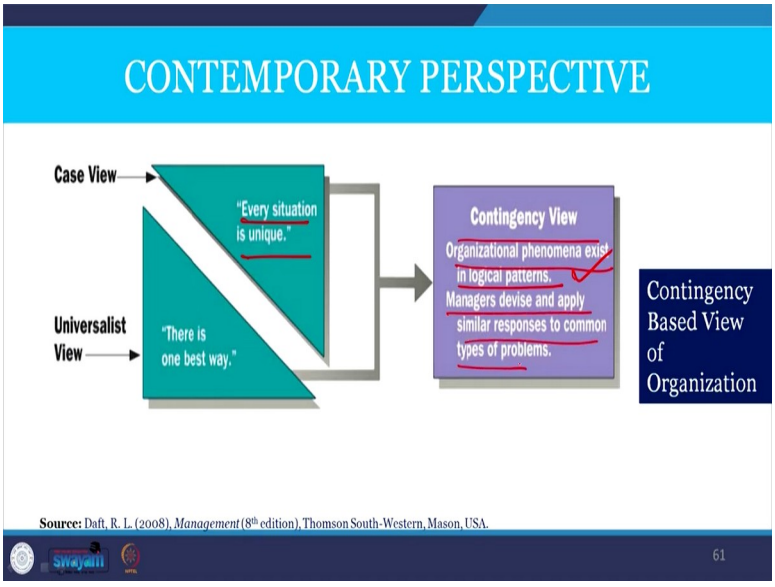

So, if you look at both the views the classical approach has a universalistic view or there is one best way of managing organization. And the contemporary view is a case-based view where every situation is unique since, every organization encounters a different situation.

So, organizational performance exists in logical patterns. It emphasises on use of logic or logical patterns, situation-based analysis of the problems and adopting a logical approach to decision making. Managers revise and apply similar responses to common types of problems.

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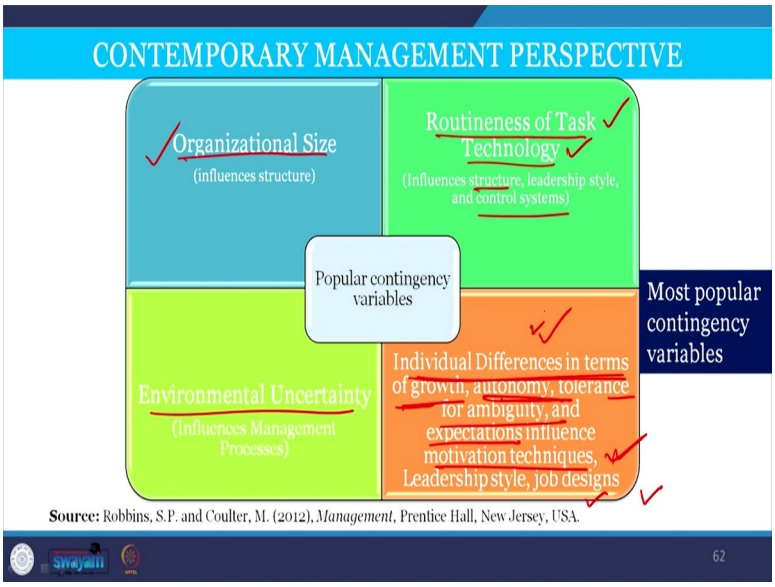

Popular contingency variables are organizational size, routineness of task technology, environmental uncertainty, individual differences in terms of growth, autonomy, tolerance for ambiguity and exceptions. So, we will discuss each one in detail.

The organizational size; the first perspective which says that size of an organization. So, if the organization has a small size or if there are a smaller number of people, it would have a different on a structure. It will have a different type of structure, if the organization grows in the growth phase when large number of people are recruited, the structure would not be simple, but it would be different. There would be more hiring and managerial levels would be more.

So, there is an impact of organizational size and its influence on structure. Routineness of task as well as technology. If the task is routine or say repetitive, it influences structure, there would be more of division of routine task, specialization, leading to jobs specialization. So, the structure would be highly bureaucratic.

If the task is non routine type or innovative. So, the structure would be flexible. Similarly, the technology deployed will have an influence on structure. A technology which is non routine will influence the structure, will influence the leadership style and control system. If there is a routine type of technology the control system would be autocratic and if there is a non routine technology or which emphasises on innovation, there is less of managerial control.

So, that is how the contingency factors influence the decision-making or influence the management concepts within the organization.

Environmental uncertainty: This another variable also influences how the management processes or how the management concepts are applied. If the environment is stable and or on the other hand if the environment is dynamic.

Does it influence the management concepts within the organization? In a stable environment, the structure would be tall and hierarchical with management control at the top or the top-down management approach being exercised.

Dynamism or environmental dynamism is because of changing preferences of customers, because of advent of new technology, or because of competition. So, if there is intense competition, intense rivalry within an industry it will have an influence on how the structures are designed and how strategy changes.

So, with competition, the structure is fluid and not rigid. The structure of an organization would be organic type or would be highly flexible. So, as the rigidity reduces, there is less of rules and regulations. So, concluding this discussion, management processes are influenced by environmental variables.

The last point is individual differences in terms of growth, autonomy, tolerance for ambiguity, and expectations in individual differences. Each individual is different in his or her approach, in his or her aspirations for learning and growth. If a manager is aspiring to learn and grow. So, there would be an influence on how the motivation techniques are being applied.

If a person is intrinsically motivated. Say, for example, if somebody wants to learn and grow. So, he cannot be motivated by rewards he cannot be motivated by hike in salary or

he cannot be motivated by extrinsic factors. So, motivational techniques designed would be completely different. Similarly, autonomy; some people have different levels of need satisfaction. There is, as we studied earlier the Maslow's law of need hierarchy, every individual has different types of needs: need for affiliation, need for power, need for belongingness, need to satisfy the biological needs etc.

So, an individual like preference for housing, for safety and so on. So, the individual depending on differences in individual preferences, individuals need satisfaction. So, motivational techniques, leadership style, and jobs can be designed accordingly. Some jobs will give more autonomy to the individuals who require autonomy and freedom; some jobs will be of routine type or some jobs are enriched as per the individual differences.

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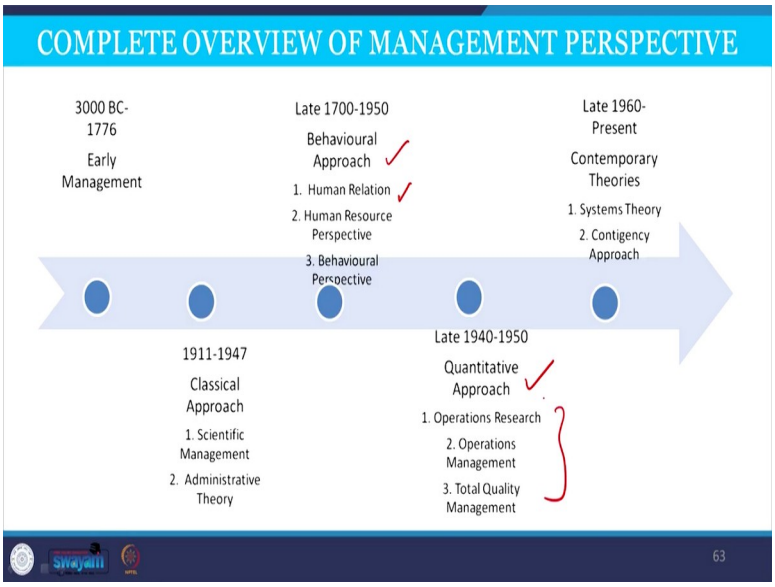

So, giving a complete overview of the management perspectives; what we discussed in evolution of management. The concept of managements started early in the year 3000 BC to 1776. So, early management concepts discussed about Adam Smith's and further 1911 to 1947, we discussed about classical approach of management where scientific management and general administrative theory of management was discussed.

Scientific management basically focused on the principles of scientific management proposed by Frederick Winslow Taylor and time and motion study proposed by Frank

and Lillian Gilbreth. Then we discussed about administrative theory proposed by Henri Fayol.

Max Weber proposed bureaucracy and Fayol gave principles of general administration. Later in behavioural approach, human relations late 1700s to 1950s, the behavioural approach, human relations management, then human resource perspective and behavioural perspective.

We discussed about Hawthorne studies proposed by Elton Mayo, we discussed about the Maslow's need of hierarchy, Maslow's law of need hierarchy and then Theory X and Theory Y by McGregor and various Behavioral perspectives proposed by Chester Barnard, Mary Parker Follett and so on.

In late 1940s to 1950s, we discussed about quantitative approaches of management. These approaches of management basically emphasised on operations management, total quality management and operations research methodology.

So, there they emphasised on the use of statistical methods and mathematical modelling in taking managerial decisions. Decisions like scheduling task or resource allocation as well as inventory management. Managing quality in order to improve the fitness of use later in 1960s to present the contemporary perspectives of management prevail.

So, contemporary perspective of management basically emphasises on systems view approaches. We discussed about open systems, how organizations are pursued as an open system, right from the traditional view, organizations were pursued as machines.

There is a contradiction between the traditional perspective of management and the contemporary perspective of management. Traditional management pursued organizations as machines and employees were merely cogs in the wheel or they were parts of the machine.

So, there was an emphasis on top-down approach of management whereas, the contemporary management perspective talks about the situations control the organizational processes, they give emphasis on the role of external environment. Or, organization is just like an open system which is working in close harmony with external environment.

So, input from the external environment is transformed into various processes and released in the external environment as a finished product or service. The product needs to be continuously improved as per the responses given by external by the costumers.

So, which means that the organization is taking inputs from or drawing resources from external environment and is responsible enough to the society to the environment. So, this perspective is talking about the development, talking about the participative nature of participative approach of management.

So, there is a shift from the top-down management towards the participative approach of management. So, this gives a complete overview of how the management concepts have evolved over a period of time. Yes, of course, certain management practices which existed in the scientific management era or in the general administrative theory of management or the principles of applying science in management, are still adopted in the organizations.

However, certain modifications have been made in the management practices in order to be more responsive to environmental or the situations or situations of a business environment.

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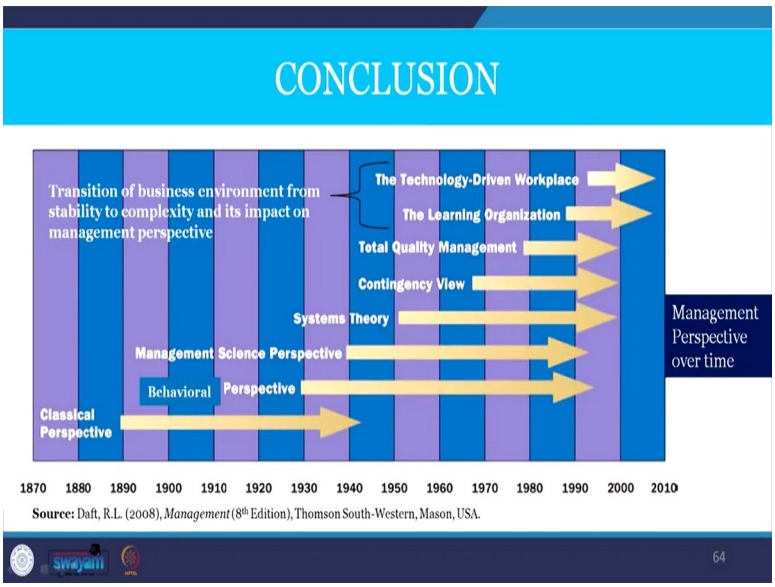

So, we discussed various management perspectives over time. Classical perspective was followed by behavioural perspective or management science perspective or use of

quantitative methods and mathematical models in managerial decision making. Further, there was a systems approach and contingency view started gaining importance and total quality management started further. It emphasised on customer satisfaction and continuous improvement of products and services.

Then the emphasis the was laid on learning and development, learning organization or technology driven organizations. So, the transition of business environment from stability to complexity and its impact on management perspective has been discussed in the contemporary view of management.

With this we would like to conclude the discussion, and the evolution of management is very important. It is not just to know the chronology of events, but to know how those principles are similar or different from the past. The question is whether these theories are still relevant in the present management perspective or not.