UNIT 14   OPEN AND COOPERATIVE SYSTEMS

Structure

14.0   LEARNING OUTCOME

After studying this unit, you should be able to:

- understand the system approach in the study of organisation;

- analyse the features of closed, open and cooperative systems; and

- discuss the synthesis of closed and open system;

14.1 INTRODUCTION

This unit outlines the systems approach in the study of organisation. It deals with the closed and open systems approaches.

The Study of Organisations has fascinated researchers over centuries. Various approaches have been adopted to analyse organisations. The earlier studies of systems approach adopted the evolutionary perspective in analysing the development of social systems. These were the stages societies or social systems undergo through social differentiation. The differentiation process was also central to modernisation, in that a unit or sub-system divides into separate systems or units, which differ in both structure and functional significance. The literature on Organisations is drawn from a variety of sources and is multidisciplinary in nature, with contributions from sociology, political science, public administration, economics and psychology, to name a few.

Undifferentiated social systems can best be illustrated by the kinship-centred household, which combines both the units of residence and agricultural production. Our knowledge about the Systems approach would be incomplete without an understnding about the basic assumptions/theoretical underpinnings underlying the two main

approaches central to the Systems analysis, the closed systems and the open system models. One led to the other, in that the critique of the closed system approach opened the way for the conceptualisation of the open systems model. Taken together, they constitute the whole.

The two major schools of thought could be broadly analysed under the closed Systems Approach and the open systems approach. In this unit we will be discussing the models under closed and open system, cooperative system, and syntheses of closed and open system.

14.2   THE CLOSED SYSTEM

The Closed Systems approach is based on the theory of formal organisation. The three major models under the Closed Systems are: (a) scientific management (b) administrative management and (c) Weberian bureaucracy. These schools were based on the rational model according to which a system could be closed, or if closure were not complete, the external forces acting on it would at least be predictable.

Features of Closed Model

Under the closed model, work is systematically divided into different components, which follow standardised work methods. The system is planned in such a way that there is no scope for any part to malfunction. All the tasks are thus isolated from the outside environment. The model does not take into account the human factors that are likely to impact on the organisation.

14.2.1   Scientific Management

The scientific management movement headed by Frederick Taylor dominated the post World War II industrial set up. His work, published in 1911, was titled Principles of Scientific Management. The Scientific Management Movement which flourished at the beginning of the 20th century continuous to remain very much in use in industry today. The Scientific Management Movement had its intellectual roots in America's business and engineering colleges. The focus of this approach is on improving organisational efficiency and increased production. It primarily focuses on manufacturing and production activities. It employs economic efficiency as its ultimate criteria and tries to maximise efficiency by planning out procedures, based on technical logic. An important step is to set standards and exercise control to ensure that the standards conformed to a technical logic.   Scientific Management is more popularly known as time and motion studies. The emphasis of this approach is on rationality.   Scientific Management sought to achieve conceptual closure of the organisation based on the assumption that goals are known and tasks are repetitive. Taylor tried to standardise tasks based on the time and motion study to quantify the amount of time each task would require. According to Taylor there was only one best way to accomplishing a task. He set about breaking up each task into segments to study the time each task required. Thus, through time and motion studies, he tried to standardize tasks, tools and techniques.

Taylor's scientific management demonstrated how production could be efficiently organised and planned to meet specific targets. Scientific and systematic management was Taylor's remedy to inefficiency in production. The foundation of scientific management was built upon clearly defined principles. To quote Taylor (1947) "This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it"

Taylor demonstrated this concept with his experiments at Bethlehem Steel Company where loading of pig iron per man per day increased dramatically as a result of his experiments. Taylor's scientific management had a universal message and relevance irrespective of the system of government. Standardisation of work methods was the key to improved efficiency. According to Taylor "it is only through enforced standardisation of methods, enforced adoption of the best implements and working conditions, and enforced cooperation that this faster work can be assured. And the duty of enforcing the adoption of standards and of enforcing this cooperation rests with the management alone"'"

As Waldo observes (1948): "Scientific management and public administration are related aspects of a common phenomena: a general movement to extend the methods and the spirit of science to an ever-widening range of man's concerns". The impact of Taylorism on administrative theory was indeed far reaching.

14.2.2 Administrative Management Movement

The administrative-management movement, drawing inspiration from the scientific management movement, divided work according to a master plan. Gulick and Urwick (1969) set forth principles of public administration, which had universal application since they were assumed to be based on scientific principles.

The essence of their theory of organisation lay in the division of work and the co-ordination of the parts with the whole. This could be accomplished in the following manner:

- By organisation, that is, by interrelating the subdivisions of work by allotting them to men who are placed in a structure of authority, so that the work may be co-ordinated by orders of superiors to subordinates, reaching from the top to the bottom of the enterprise.

- By the dominance of an idea, that is, 'the development of intelligent singleness of purpose in the minds and wills of those' who are working together as a group, so that each worker will, of his own accord, fit his task into the whole with skill and enthusiasm

Administrative management theorists designed the nuts and bolts for the administrative machine. Their emphasis is on the organisation of work and the division and co-ordination of activities. They spell out the principles of public administration by specifying its various aspects through concepts such as span of control and unity of command. Span of control refers to the number of subordinates a supervisor can control

effectively. Unity of Command implies that a workman, should have only one boss if he is to perform his duties satisfactorily. Gulick and Urwick also propose seven Principles of Public Administration (POSDCORB) they stand for:

- Planning

- Organising

- Staffing

- Directing

- Coordinating

- Reporting

- Budgeting

Administrative Management focuses on structural relationships among the units of the organisation such as production, supply, personnel, and other units. According to its reasoning efficiency would be maximised by specialising in tasks and grouping them into departments. Responsibilities are to be fixed according to principles such as delegation, span of control and unity of command. Administrative management assumes that it can achieve closure by strictly following a master plan against, which specialisation, departmentalisation and control are determined.

14.2.3 Weberian Bureaucracy

The third important model based on the rational or closed-systems approach is the Weberian theory of bureaucracy. Max Weber identifies three types of authority:

traditional, charismatic and legal-rational. Among them, rational authority is grounded in the legitimacy of rational-legal rules. The Weberian model achieves conceptual closure through defining offices according to jurisdiction in a hierarchical structure.   The Weberian theory focuses on staffing and structure as also on establishing rules for all categories of activities.

Weber found the bureaucratic system "rational" as it assures predictability of the behaviour of employees working in it. The bureaucratic organisation is designed to work in a "rational" manner as tasks to be accomplished are divided into highly specialised jobs. The office functions on the basis of well-defined rules. The assumption is that strict adherence to Rules ensures predictability; it makes the system insensitive to pressures; it minimises discretion; I ensures objectivity, impartiality and uniformity in the application of rules. Thus, the system is highly predictable and reliable as it encourages vigorous application of rules. The organisational ethos further reinforces this. However, the emphasis is more on discipline and conformity to tuels of the organisation, rather than innovation and experimentation.

Rational authority is thus grounded in rational-legal rules. The emergence of the rational-legal authority system is dependent on the breakdown of particularistic traditionalised structures. It also has a levelling influence when privileged status based on birth and social class give way to universalistic norms. Unlike the traditional and charismatic authority systems where obedience is owed to a person, under legal-rational authority obedience is owed to an impersonal order, which has been legally established. However,

as Henderson and Parsons (1947) observe, none of the historical cases examined by Weber adhere to these three ideal types in their 'pure' form.

Unlike the other forms of organisation, bureaucracy is based on the legal-rational authority system. The distinguishing features of bureaucratic administration are: hierarchically organised offices with defined competence; selection on the basis of technical competence specialised knowledge and merit criteria; separation of the 'personal' from the 'public' domain; a career system with advancement based on seniority and /or achievement; salary paid in money; and a mechanism for disciplinary purposes.

14.2.4 Evolution Through Differentiation

An essential element in Weber's conceptual approach is the concept of "differentiation." He contends that the fully developed bureaucracy would be as efficient as the mechanical process of production. Similarly, the separation of personal from official interests of an incumbent could result in a clear differentiation between the two. When this happens officials would transcend love and hate or prejudice and hence would be impartial in their dealings with their clients. This would result in the systematic application of law irrespective of who the clients are. The differentiation would involve the following stages: (a) hierarchical organisation of office; (b) codification of laws; (c) appeals from lower level to the higher level; (d) fixed and official jurisdictional areas governed by laws, rules and administrative regulations; (e) fixed official duties; (f) stable distribution

of authority to give commands, and (g) selection to office of persons with requisite qualifications. Max Weber proceeds to make a related observation:

> "The fully developed bureaucratic mechanism compares with other organisations exactly as does the machine with the non-mechanical modes of production. Precision, speed, un-ambiguity, knowledge of the files, continuity, discretion, unity, strict subordination, reduction of friction and of material and personal costs…these are raised to the optimum point in the strictly bureaucratic administration…" (Gerth and Mills, English translation of Weber's original work in German, 1956, p. 214).

Weber's bureaucratic theory had far-reaching implications. It held out the hope that rational bureaucratic organisations could be developed anywhere in the world. There was no reason why this mechanical device could not be imported into any country. The Weberian model highlighted formal rationality – a belief in the possibility of quantitative calculation even in the relationship among men. Through discipline, it is possible for leadership to be confident of uniform and predictable responses to the exercise of formal authority.

Common to all three approaches Scientific Management, Administrative Management and Weberian Bureaucracy is their worldwide relevance. Improved efficiency is the ultimate objective of all the three models. Each tries to achieve efficiency through a closed - system strategy. For example, scientific management focuses mainly on

production activities through planned procedures and set targets. Based on the assumption that goals are known and tasks are repetitive, the organisation achieves conceptual closure.

The administrative-management model attempts to realise economic efficiency through the structural relationships that exist between its several components (e.g., production, personnel and supply). The emphasis is on specialised tasks being grouped into departments, which in turn would facilitate fixing of responsibility based on principles such as span of control. Administrative management obtains closure in that specialisation, departmentalisation and control, follow a master plan.

In the case of weberian bureaucracy, the focus is on staffing and structure. The office is organised on a fixed pattern of super-subordinate relationships and strict observance of rules and regulations. Thus, all three models offer the potential for applying their techniques across cultures. They could be applied in democratic and non-democratic, developed and developing countries. They call for controlled conditions and hold all other factors constant.

14.3 THE OPEN-SYSTEMS APPROACH

Features of Open System

Whereas the Closed Systems approach believed in the insulation of the organisation from outside pressures, the Open Systems Approach conceives Organisations as part of a larger environment. It argues that work cannot be strictly compartmentalised into watertight components. The Open system is based on the assumption that human beings cannot be programmed to work like machines. They have to be motivated to contribute their best towards attaining organisational goals.

The Human Relations school challenged the view of scientific management of scientific that factories are essentially nothing more than production systems and that workers could be made to work as machines. The Open-System Approach, which is also identified as the natural-system model. It grew out of a challenge to the closed systems approach. As a natural system the complex organisation is viewed in the context of inter-dependent parts, which together constitute a whole. Each part is expected to contribute something towards the whole. The whole in turn is inter-dependent with the larger environment. Survival of the system is the ultimate goal wherein the relationship between the parts is determined through an evolutionary process. Dysfunctions are conceivable, but the assumption is that an offending part will adjust in order to produce net positive contribution or alternatively disengage itself. If this does not happen the system will degenerate. Whereas the Closed System sealed off the organisation from influences from the environmental variables. The Open-System, which is also, a cooperative system asumes interaction between the different parts. The Open-System focuses on variables, which are not included in the rational models such as sentiments, cliques, social controls through informal norms, etc. The informal or Open-System

organisation is considered as a spontaneous entity, which is essential for complex organisations to function by permitting the system to interact with the environment, make suitable adaptations in order to. We can trace the origin of the open-systems model to the Human Relations movement.

14.3.1 The Hawthorne Experiment

The Hawthorne Studies conducted by Elton Mayo at the Hawthorne plant of the Western Electric Company, located in Chicago, USA, marked the watershed in the way scholars viewed organisations. The experiments at the Hawthorne plant centred around two groups of female workers, both performing the same tasks. The two groups were made to work in different rooms with different levels of illumination. However, the researchers observed that there was no difference in the output of the two groups despite the varying levels of illumination at their work place. They concluded that awareness on the part of the workers about the fact that they being observed had its impact on the two groups. From this, the researchers inferred that paying more attention to workers rather than treating them, as machines would lead to greater productivity.

One of the major contributions that came out of these research efforts was the birth of the informal organisation, highlighting the role of groups in shaping the behaviour of workers. The Hawthorne study opened up the field of organisation theory to the examination of a whole new set of variables that could influence the work environment, and which were ignored by the Closed System theorists.

14.3.2 Hierarchy of Needs

Theories of human motivation in course of time became an important area of research. Abraham Maslow's theory of "Hierarchy of Needs" is a seminal work in this area. According to Maslow there are five categories of needs that need to be satisfied. They are physiological needs, safety and security needs, social needs, esteem needs, and self – actualisation needs. The physiological needs form the foundation of the human need system, which include the basics for survival such as food, water and clothing. Once the physiological needs are satisfied, the next set of safety and security needs have to be addressed. These are followed by satisfaction of the need for esteem and recognition, which is also referred to, as ego needs. This need for self-actualisation is driven by the desire to excel and be recognised. Once the lower level needs are satisfied, the individual may achieve self-actualisation, thus fulfilling one's potential to perform in a particular area. However, as needs are satisfied they no longer serve as motivators. Thus, once each of the "lower" needs is satisfied, men seek to fulfil the next higher need.

14.3.3 Humanistic Organisation

Chris Argyris compares bureaucratic – pyramidal values, which dominate closed-Systems organisations with humanistic – democratic value system, central to Open-Systems organisation. He came to the conclusion that while bureaucratic values lead to shallow

and mistrustful relationships, humanistic or democratic values enhance inter-group cooperation and organisational effectiveness.

14.3.4 Prismatic-Sala Model

Fred Riggs has formulated the Prismatic-Sala model for analysing the administrative sub-systems of developing countries. His prismatic-sala model is based on a series of interconnected concepts. Riggs places societies on a scale of differentiation, from fused or functionally diffuse ones, whose structures perform a large number of functions, as opposed to diffracted or functionally specific societies, with a limited number of functions and in which every function has a corresponding structure. A prismatic society is a transitional society which occupies an intermediate position between the fused and diffracted ones.

Sala is a Spanish word which means an office that merges specialised administrative tasks with traditional functions. For example, a government office could be a personal room at home from which both office functions and family tasks are undertaken. A prismatic society is also characterised by heterogeneity. It refers to the simultaneous presence of the mixture of traditional and modern practices and elements or different kinds of systems and norms. Formation is yet another characteristic of prismatic societies. It refers to the gap between appearance and reality or formally prescribed and effectively practised behaviour.

14.3.5 Cooperative System

Our discussion of the open-systems model would be incomplete without highlighting the cooperative approach as outlined by Chester Barnard. According to Barnard an organisation is a part of the larger system-society. The organisation is in close interaction with its environment. Barnard adopted a consensual approach in defining the concept of authority, which rests on the acceptability of subordinates. Central to the cooperative system are communication channels, which need to remain open so that the executive can communicate effectively with the employees both in terms of communicating organisational objectives and for learning the employees' requirements. These could be written, verbal or observational. Again, authority is heavily dependent upon the system of communication adopted by the organisation as also on the cooperation and personal attitudes of individuals working in it. Acceptance of authority by individuals working in an organisation is dependent upon he following factors: (a) communications have to be clear and understandable; (b) they have to be consistent with the organisational goals and objectives; (c) they have to be compatible with the personal interests of the employees; and (d) they should be designed in such a way that they motivate individuals working in an organisation. Thus, authority is closely intertwined with the system of communication as also with the spirit of cooperation amongst individuals working in the organisation. At the core of the cooperative model is participative management and mutual dependence of management and employees in running the organisation. Further, an organisation is a mix of formal and informal interactions and relationships. They both build on each other and one cannot survive without the other. In fact, an informal organisation creates a

formal structure in course of time through an evolutionary process. Formal organisation in turn leads to the creation of informal groups and structures.

The organisation has to abide by the rules of the game, which are arrived at through some kind of contract. It could however negotiate if it so desires for a revised set of rules.

14.4   SYNTHESIS OF CLOSED AND OPEN-SYSTEMS

The assumptions on which the closed-system and the Open-System operate are thus based on extreme positions. However, in reality organisations cannot afford to be either totally closed or totally open. The Closed-System, which emphasised on rationality, came under severe criticism by scholars such as Herbert Simon. He calls the principles of public administration as outlined by the administrative management movement, as nothing more than proverbs. He points out that for every set of principles there can be a contradictory set of principles. What we emphasise is that these two extreme approaches need to be reconciled. As one can see some organisations which face environmental influences require them to be flexible and informal, to be in consonance with the)pen-Systems model. On the other hand, organisations which by nature manage routine standardised activities could be operated on the Closed-System model. Thus, as Thompson observes, organisations are a combination of the two approaches. They are differentiated systems wherein some components or sub-units could be designed to function as open-systems and some others as closed. James March and Herbert Simon were the first to recognise and incorporate the open-systems approach into organisational

studies. Katz and Khan made a systematic and comprehensive attempt in incorporating the Open Systems approach into organisational studies.

14.5 CONCLUSION

The foregoing analysis describes the various approaches adopted in the study of Organisations. Two broad streams of thought are identified – the Closed System and the Open Systems approaches in organisation theory. The three main models under the Closed–System are the Scientific Management; the Administrative Management Movement; and the Weberian bureaucracy.   These three models are also known as the "Rational" models.   All the three models believe in the conceptual closure of organisations.   They believed that organisations could be sealed off from outside influences.   The Closed Systems approach is based on the formal theory of Organisation. Models following the closed systems approach assume that by adopting rationality the Organisation could be managed on scientific lines. According to them there is 'one best way' to organise men and matters irrespective of cultural differences or variations in political systems.

Differentiation is at the core of the systems approach. The argument is that the more differentiated the structure or an organisation, the more complex it is likely to be. Coordination will then be the central issue.

The Open–Systems approach adopts a totally opposite approach in that organisations are conceptualised as informal and open to environmental influences. The human relations school was perhaps the first to follow the Open System model. The Cooperative Organisation also reflects the views of Open Systems theorists. Communication is central to the Cooperative Organisation. The advocates of this view argue that many variables impact on the Organisation such as human emotions, inter-group relations, etc., which cannot always be anticipated in advance.

Though the two approaches are based on different sets of assumptions, we can argue that a synthesis of the two approaches is possible at the theoretical level. An organisation can have components that follow the Closed Systems approach and some other components might reflect the Open Systems approach. In fact, the Open Systems theorists assume that the formal and informal organisations are closely interrelated; and one leads to the other.

14.6   KEY CONCEPTS

Political Culture: That part o the overall societal culture that determines a community's attitudes toward the quality, style, and vigor of its political processes and government operations.

Rational Decision Making Model: A view of the public policymaking process that assumes complete information and a systematic, logical, and comprehensive approach to change.

Satisfice: Accept a satisfactory and sufficient amount of information upon which to base a decision. Herbert Simon invented this word to help explain his theory of bounded rationality.

Systems Analysis: The methodologically rigorous collection, manipulation, and evaluation of data on social units (as small as an organisation or as large as a polity) to determine the best way to improve their functioning and to aid a decision maker in selecting a preferred choice among alternatives.

Unit Cohesion: Solidarity within a work group as demonstrated by commitment to common goals, to the organisation as a whole, and by the members to each other.

14.7 REFERENCES AND FURTHER READING

Barnard, I. Chester, 1938, *The Functions of the Executive*, Harvard University Press, Cambridge.

Gulick, Luther and L. Urwick, 1937, *Papers on the Science of Administration*, Institute of Public Administration, New York.

Henderson, A.M. and Talcott Parsons, 1947, *Max Weber: The Theory of Social and Economic Organization*, Oxford University Press, New York.

Maslow, Abraham, 1954, *Motivation and Personality*, Harper & Brothers, New York.

Taylor, Frederick W., 1947, *Scientific Management*, Harper & Brothers Publishers, New York.

Thompson, James D., 2003, *Organizations In Action : Social Science bases of Administrative Theory*, Transaction Publishers, New Brunewick.

14.8 ACTIVITIES

Q.1   Explain briefly the importance of the Systems Approach to the study of organisation.

Q.2   It is said that the closed and open systems approaches are two sides of the same coin. Explain.

Q.3   Design an organisation, which combines all the three approaches – Closed, Open and Cooperative Systems. Outline its various activities and then group them under (a) closed system, (b) Open System and (c) Cooperative System. This exercise will help you in identifying activities in an organisation which can be best handled by adopting each of the three different approaches for separate set of functions within he same organisation.