Diffusion and Adoption of Innovation

Technical Report · October 2018

CITATIONS
0

READS
579

3 authors, including:

Kamala Kant
Chandra Bhanu Gupta PG College of Agriculture
44 PUBLICATIONS **25** CITATIONS

SEE PROFILE

DIFFUSION AND ADOPTION OF INNOVATION

AG. EXT.-503 (2+1)

DEPARTMENT OF AGRICULTURAL EXTENSION
CBG PG COLLEGE OF AGRICULTURE
B.K.T., LUCKNOW-226201

2018

MANUAL

DIFFUSION AND ADOPTION OF INNOVATION

AG. EXT.-503 (2+1)

Dr. KAMALA KANT
Assistant Professor
Dr. K.D. SINGH
Assistant Professor
Dr. S. K. Singh
Assistant Professor
Dr. UROOZ ALAM SIDDIQUI
HEAD

DEPARTMENT OF AGRICULTURAL EXTENSION
CBG PG COLLEGE OF AGRICULTURE
B.K.T., LUCKNOW-226201

2018

SYLLABUS

THEORY

Unit-I: Innovation: Meaning of innovation, innovativeness, perceived attributes of innovation. The adoption process: meaning of adoption and adoption process, stages in adoption process, adopter categories, characteristics of adopter categories, rate of adoption and factors influencing rate of adoption.

Unit-II: Diffusion: Meaning and definition of diffusion, diffusion process and its elements. Diffusion effect and concept of over adoption.

Unit-III: Multi-steps flow of innovation, concept of homophily and heterophily and their influence on flow of innovation

Unit-IV: Innovation process: the innovation-decision process, types of innovation decision- optional, collective &authority and contingent innovation decision, consequences of innovation decision- desirable & undesirable, direct & indirect and anticipated & unanticipated.

PRACTICAL

1. Identification of adopter categories on a selected technology.
2. Study of attributes of current farm technologies.
3. Field visit and study of the recently diffused technology.
4. Study of factors increasing or retarding the rate of adoption

Unit-I: Innovation

LECTURE-1

Meaning of innovation

The technologies and practices developed through research are innovations. These may be new varieties of crops & plants, new breeds of livestock or fish species, new chemicals & medicines and new technique of doing things etc. Farmers themselves may develop some new practices, which are also innovations. Irrespective of the time period the idea or practice was originally developed, when a person first become aware of it, it is an innovation to that person.

Definition of Innovation

An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption.

Technology

A technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome. Most technologies have two components 1) hardware, consisting of tool that embodies the technology as a material or physical object and 2) software, consisting of the knowledge base for the tool.

Innovativeness

Innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system. If the individual is like most others in the late majority category, he is low in social status, makes little use of mass media channels, and secures most of his new ideas from peers via interpersonal channels.

Innovativeness indicates behavioral change, the ultimate goal of most diffusion programs, rather than cognitive or attitudinal change (Rogers, 1971).

LECTURE-2

Perceived attributes of innovation

The five attributes of innovations are:

1. **Relative advantage**

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. The degree of relative advantage is often expressed in economic profitability in status giving or in other ways. The nature of the innovation largely determines what specific

type of relative advantage (such as economic, social and the like) is important to adopters, although the characteristics of the potential adopters also affect which dimensions of relative advantage are most important.

Relative advantage may have a number of dimensions: for example, if a new technology or practice gives more yield or income or saves time, labour and cost or has less risk than the existing one (e.g.: cross bred cows milking early and Amrapali mango bearing 3rd year).

The relative advantage of an innovation as perceived by members of a social system, is positively related to its rate of adoption.

2. Compatibility

Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. An idea that is more compatible is less uncertain to the potential adopter. An innovation can be compatible or incompatible (1) with socio-cultural values and beliefs, (2) with previously introduced ideas, or (3) with client needs for innovations.

The compatibility of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

Compatibility has at least two dimensions:

Situational compatibility-when a new crop variety suits the agro-climatic condition of the farmer. E.g. package of practice for wheat and rice.

Cultural compatibility-when a breed of livestock advocated to the farmers is in agreement with their beliefs and value.

A *technology cluster* consists of one or more distinguishable elements of technology that are perceived as being closely interrelated.

3. Complexity

Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use. Any new idea may be classified on the complexity-simplicity continuum. Some innovations are clear in their meaning to potential adopters while others are not.

E.g. many of the high yielding technologies like HYV crops, crossbred cattle, composite fish culture.

The complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption.

4. Trialability

Trialability is the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on the installment plan will generally be adopted more rapidly than innovations that are not divisible. An innovation that is trialable is less uncertain for the adopter. Some innovations are more difficult to divide for trial than others.

Relatively earlier adopters perceive trialability as more important than do later adopters. Laggards move from initial trial to full-scale use more rapidly than do innovators and early adopters.

The trialability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

e.g. the miniket demonstration have helped in spreading the cultivation of high yielding variety crops as this method involves small scale trial by the farmers.

5. Observability

Observability is the degree to which the results of an innovation are visible to others. The results of some ideas are easily observed and communicated to others, whereas some innovations are difficult to describe to others.

The observability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

LECTURE-3

Meaning of adoption

Adoption process

According to Rogers (1995) Adoption process is a mental process through which an individual passes from hearing about an innovation to final adoption.

Differentiation between diffusion and adoption

Diffusion is a social process while adoption is a mental and individual process. Diffusion and adoption are thus closely interrelated concepts and processes.

Stages in adoption process

The decision to adopt an innovation, involves a process composed of learning, deciding, and acting over a period of time. The adoption process, as a decision-making process goes through a number of mental stages before making a final decision to adopt an innovation. Decision - making is a process comprising a sequence of stages with a distinct type of activity

occurring during each stage. The way in which an individual adopts an innovation is involves the following five steps namely (North Central Rural Sociology of Farm Practices, 1955).

a) Awareness Stage

The farmer comes to know the existence of the new idea but he doesn't have full information about the idea. At this stage farmer is aware of the idea, but lacks detailed information about it.

b) Interest Stage

The farmer develops interest in the innovation and seeks additional information about it. That means the farmer acquires more information about an innovation or idea by wanting to know what the innovation/idea is, how it works and what are its potentialities.

c) **Evaluation Stage**

The farmer makes mental application of the new idea in the present and anticipated future situations and decides whether or not to try it. He judges the utility of the innovation, makes an assessment whether the idea is applicable to own situation and if applied what would be the result.

d) Trial Stage

The farmer applies the new idea on a small scale in order to determine its utility or feasibility and applicability in own situation. If, in the judgment of the farmer, the innovation has some plus points i.e. applicable to own situation, and if applied shall in some way or other be of advantage, the person takes a decision to try it.

e) Adoption Stages

The farmer uses the new idea continuously on a full scale. Trial may be considered as the practical evaluation of an innovation. The innovation becomes a part of his normal farming activity. It provides the advantage of the innovation and hence the farmer takes final decision and applies the innovation in a scale appropriate to own situation on a continued basis.

LECTURE-4

Ryan and Gross (1943): were probably the first to recognize that the adoption of a new idea consisted of stages (on hybrid corn)

1. **Awareness-**of the existence of an innovation
2. **Conviction of its usefulness**

3. Acceptance in the sense of willingness to try an innovation which is followed by its

4. Complete adoption

Welkening (1953): described the adoption of an innovation as a process composed of learning, deciding and acting over a period of time. The adoption of a specific practice is not the result of a single decision to act but series of actions and though decision.

According to him, there are four adoption stages

1. Awareness
2. Obtaining information
3. Conviction
4. Trial and adoption

Adoption is essentially a decision-making process. According to Johson and Haver (1955), decision-making involves the following steps-

1. Observing the problems
2. Making analysis of it
3. Deciding the available course of action
4. Taking one course
5. Accepting the consequence of the decision

According to Singh (1965), the stages of adoption are dynamic and not static. The same five stages do not occur with all the adopters and all the practices. Sequence is not always the same. Sometimes one stage appears more than once. In some cases some stages are so short as to be imperceptible, and in other cases some stages seem to be skipped.

Identified seven stages of adoption process

1. Need
2. Awareness
3. Interest
4. Deliberation
5. Trial
6. Evaluation
7. Adoption

LECTURE-5

Adopter categories

The S-Curve of Adoption and Normality

The time variable allows researchers to classify adopter categories and to plot diffusion curves. Past research has generally shown that the adoption of an innovation follows a normal, bell-shaped curve when plotted over time on a frequency basis. If the cumulative number of adopters is plotted, the result is an s-shaped curve.

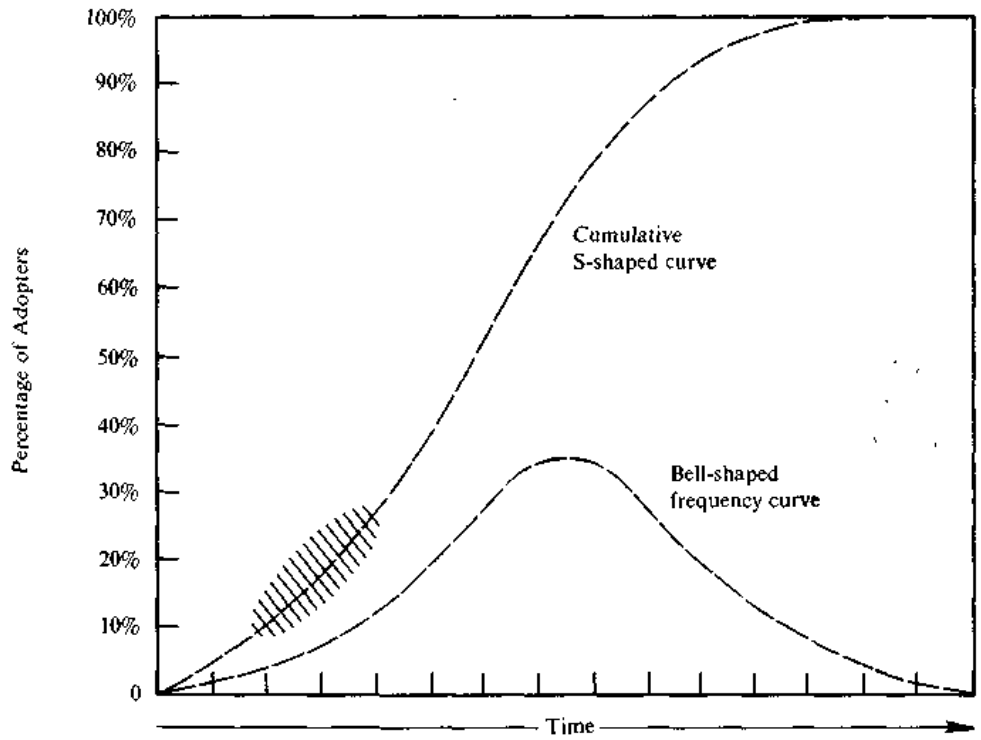

Figure-1.1: The bell-shaped frequency curve and the s-shaped cumulative curve for an adopter distribution

Adopter categories are the classifications of members of a socials ystem on the basis of innovativeness. The five adopter categories are:

(1) Innovators (2.50%)

They are **venturesome** and very eager to try new ideas. This interest leads them out of a local circle of peer networks and into more **cosmopolite** social relationships. Communication patterns and friendships among a clique of innovators are common, even though the geographical distance between the innovators may be considerable. Being an innovator has several prerequisites. These include control of substantial financial resources to absorb the possible loss

owing to an unprofitable innovation and the ability to understand and apply complex technical knowledge. The innovator must be able to cope with the high degree of uncertainty about an innovation at the time that the innovator adopts.

The innovator plays an important role in the diffusion process: that of launching the new idea in the social system by importing the innovation from outside of the system's boundaries. Thus, the innovator plays a gate keeping role in the flow of new ideas into a social system.

(2) Early adopters: Respect (13.50%)

They are localities and a more integrated part of the society. They have the **greatest degree of opinion leadership** in most social systems. The early adopter is considered by many as "**the individual to check with**" before using a new idea.

LECTURE-6

(3) Early majority: Deliberate (34.00%)

They adopt new ideas just before the average member of the society and interact frequently with their peers, but seldom hold leadership positions. They have unique position between the very early and the relatively late to adopt makes them an important link in the diffusion process. Their innovation-decision period is relatively longer than that of the innovator and the early adopter. "**Be not the first by which the new is tried, /nor the last to lay the old aside**", might be the early majority's motto.

(4) Late majority: Skeptical (34.00%)

They adopt new ideas just after the average member of the society. Adoption may be both an economic necessity and the answer to increasing network pressures. Innovations are approached with a skeptical and cautious air, and the late majority do not adopt until most others in their social system have done so.

(5) Laggards: Traditional (16.00%)

Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. They are the most localite in their outlook of all adopter categories; many are near isolates in social networks. The point of reference for the laggard **is the past**. Decisions are often made in terms of what has been done in previous generations and these individuals interact primarily with others who also have relatively traditional values. When laggards finally adopt an innovation, it may already have been superseded by another more recent idea that is already being used by the innovators.

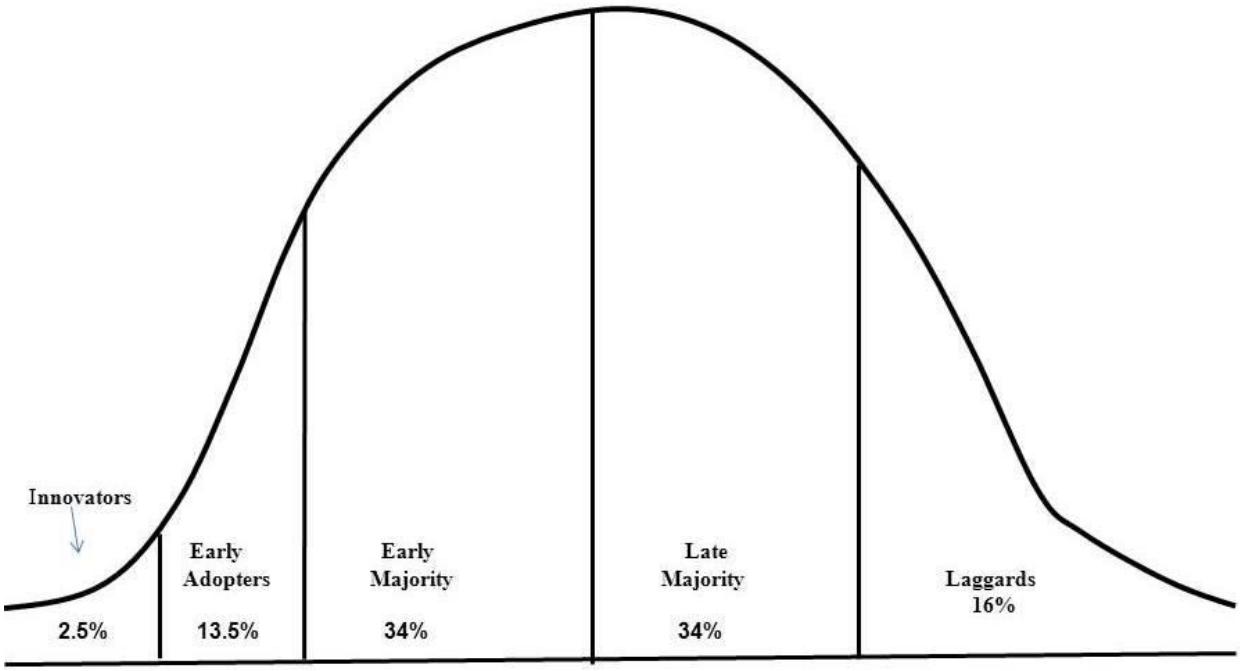

Figure-1.2: Adopter categorization on the basis of innovativeness

The innovativeness dimension, as measured by the time at which an individual adopts an innovation or innovations, is continuous. This variable, however, may be partitioned into five categories by laying off standard deviations from the average time of adoption

LECTURE-7

Characteristics of adopter categories (Rogers, 1995)

There are following characteristics of adopter categories. These are:-

A. Socio-economic characteristics

1. Earlier adopters are not different from later adopters in age.
2. Earlier adopters have more years of education than later adopters have
3. Earlier adopters are more likely to be literate than are later adopters.
4. Earlier adopters have higher social status than later adopters
5. Earlier adopters have a greater degree of upward social mobility than later adopters
6. Earlier adopters have larger-sized units(farms, companies, and so on) than later adopters

B. Personality Variables

1. Earlier adopters have greater empathy than later adopters.

2. Earlier adopters have a greater ability to deal with abstractions than later adopters
3. Earlier adopters have greater rationality than later adopters
4. Earlier adopters have greater intelligence than later adopters.
5. Earlier adopters have a more favorable attitude toward change than later adopters.
6. Earlier adopters are more able to cope with uncertainty and risk than later adopters.
7. Earlier adopters have a more favorable attitude toward education than later adopters.
8. Earlier adopters have a more favorable attitude toward science than later adopters.
9. Earlier adopters are less fatalistic than later Adopters
10. Earlier adopters have higher levels of achievement motivation than later adopters
11. Earlier adopters have higher aspirations (for education, occupations, and so on) than later adopters.

C. Communication Behavior

1. Earlier adopters have more social participation than later adopters.
2. Earlier adopters are more highly interconnected in the social system than later adopters.
3. Earlier adopters are more cosmopolite than later adopters.
4. Earlier adopters have more change agent contact than later adopters.
5. Earlier adopters have greater exposure to mass media communication channels than later adopters.
6. Earlier adopters have greater exposure to interpersonal communication channels than later adopters.
7. Earlier adopters seek information about innovations more actively than later adopters.
8. Earlier adopters have greater knowledge of innovations than later adopters.
9. Earlier adopters have a higher degree of opinion leadership than later adopters.

LECTURE-8

Rate of adoption

Rate of adoption is the relative speed with which an innovation is adopted by members of a social system. It is generally measured as the number of individuals who adopt a new idea in a

specified period. So rate of adoption is a numerical indicant of the steepness of the adoption curve for an innovation.

Factors influencing rate of adoption

Figure-1.3 indicated that 49 to 87 percent of the variance in rate of adoption is explained by the five attributes (relative advantage, compatibility, complexity, trialability and observability). In addition to these perceived attributes of an innovation, such other variables as (1) the type of innovation-decision, (2) the nature of communication channels diffusing the innovation at various stages in the innovation-decision process, (3) the nature of the social system, and (4) the extent of change agents' promotion efforts in diffusing the innovation, affect an innovation's rate of adoption.

The type of innovation-decision is related to an innovation's rate of adoption.
The communication channels used to diffuse an innovation also may have an influence on the innovation's rate of adoption

The relationship between communication channels and rate of adoption are even more complicated.

An innovation's rate of adoption is affected by the extent of change agents' promotion efforts. The relationship between rate of adoption and change agents' efforts, however, is not usually direct and linear.

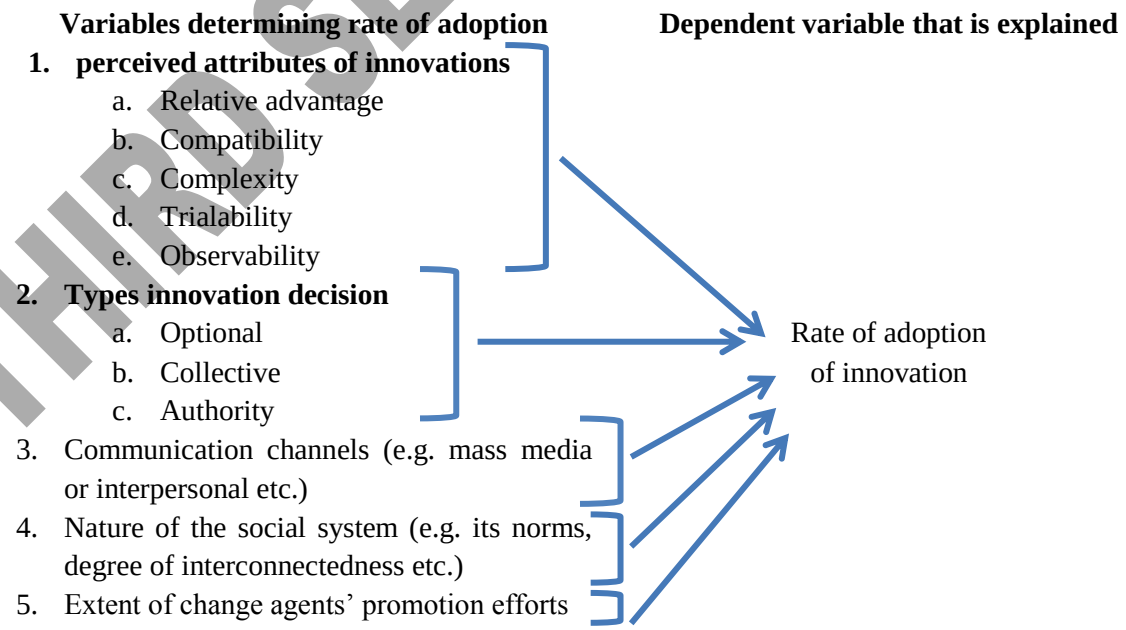

Figure-1.3: A paradigm of variables determining the rate of adoption of innovations

LECTURE-9

Meaning of diffusion

Diffusion and adoption are thus closely interrelated even though they are conceptually distinct. It takes time for an innovation to diffuse throughout the society. It is unrealistic to expect that all farmers in a community will adopt an innovation immediately after its introduction. There is always a variation among the members of the society in the way they respond to an innovative idea or practice. While there is always few members in the society who are so innovative that they adopt an innovation almost immediately after they come to know about it, the majority take a long time before accepting the new idea or practice. It is the first few adopters of an innovation who influence the other members of a community to adopt the innovation as they interact with them.

Definition of diffusion

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas. *Communication* is a process in which participants create and share information with one another in order to reach a mutual understanding.

Diffusion process

Diffusion of Innovations

Diffusion of innovations refers to the spread of those innovations through a population, and is simply the result of a host of individual adoption decisions. If individual adoption decisions are, to an extent, predictable, then the larger diffusion process is also predictable. It follows a pattern, and that element of predictability has substantial implications. Therefore the diffusion process can be explained with the terms given by Rogers as "the spread of a new idea from its source of invention or creation to its ultimate use of adopters". The diffusion of innovations is essentially a social process in which subjectively perceived information about a new idea is communicated.

LECTURE-10

Elements of diffusion

The four main elements are:

1. Innovation

An *innovation* is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is "objectively" new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation.

Newness in an innovation need not just involve new knowledge. Someone may have known about an innovation for some time but not yet developed a favorable or unfavorable attitude toward it, nor have adopted or rejected it. The "newness" aspect of an innovation may be expressed in terms of knowledge, persuasion, or a decision to adopt.

TECHNOLOGICAL INNOVATIONS, INFORMATION, AND UNCERTAINTY

"Innovation" and "Technology" as synonyms. A *technology* is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome. A technology usually has two components: (1) a *hardware* aspect, consisting of the tool that embodies the technology as material or physical objects, and (2) a *software* aspect, consisting of the information base for the tool.

Technology cluster

A *technology cluster* consists of one or more distinguishable elements of technology that are perceived as being closely interrelated. Some change agencies promote a cluster or package of innovations because they find that the innovations are thus adopted more rapidly.

2. Communication channels

Communication defined as the process by which participants create and share information with one another in order to reach a mutual understanding. Diffusion is a particular type of communication in which the information that is exchanged is concerned with new ideas.

The essence of the diffusion process is the information exchange by which one individual communicates a new idea to one or several others. At its most elementary form, the process involves: (1) an innovation, (2) an individual or other unit of adoption that has knowledge of, or

experience with using, the innovation, (3) another individual or other unit that does not yet have knowledge of the innovation, and (4) a communication channel connecting the two units.

A *communication channel* is the means by which messages get from one individual to another. The nature of the information-exchange relationship between the pair of individuals determines the conditions under which a source will or will not transmit the innovation to the receiver, and the effect of the transfer.

For example, mass media channels are often the most rapid and efficient means to inform an audience of potential adopters about the existence of an innovation, that is, to create awareness-knowledge.

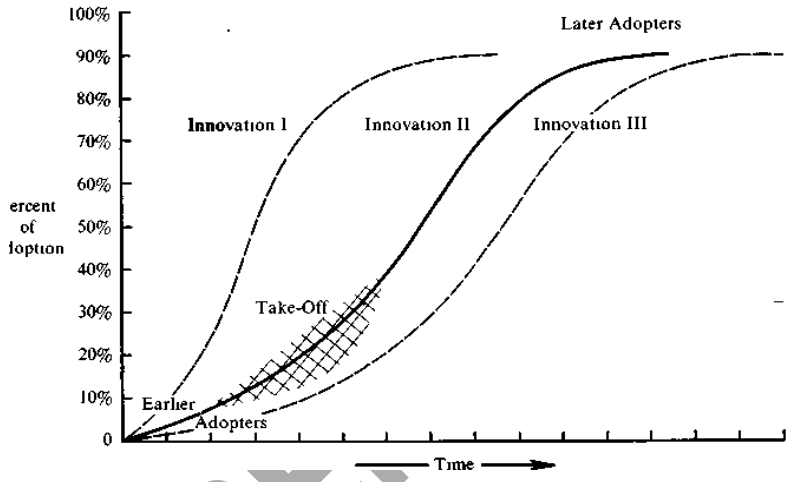

Figure-2.1: Diffusion is the process by which (1) an *innovation* (2) is *communicated* through certain *channels* (3) over *time* (4) among the members of a *social system (Rogers, 1995).*

LECTURE-11

3. Time

Time is an important element in the diffusion process. In fact, most other behavioral science research is timeless in the sense that the time dimension is simply ignored. Time is an obvious aspect of any communication process, but most (non-diffusion) communication research does not deal with it explicitly. Perhaps it is a fundamental concept that cannot be explained in terms of something more fundamental. Time does not exist independently of events, but it is an aspect of every activity.

The inclusion of time as a variable in diffusion research is one of its strengths, but the measurement of the time dimension can be criticized. The time dimension is involved in diffusion (1) in the innovation decision process by which an individual passes from first knowledge of an innovation through its adoption or rejection, (2) in the innovativeness of an individual or other unit of adoption-that is, the relative earliness/lateness with which an innovation is adopted-compared with

other members of a system, and (3) in an innovation's rate of adoption in a system, usually measured as the number of members of the system that adopt the innovation in a given time period.

4. Social system

A *social system* is defined as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems.

It is important to remember that diffusion occurs within a social system, because the social structure of the system affects the innovation's diffusion in several ways. The social system constitutes a boundary within which an innovation diffuses.

LECTURE-12

Diffusion effect

The *diffusion effect* is the cumulatively increasing degree of influence upon an individual to adopt or reject an innovation, resulting from the activation of peer networks about an innovation in a social system.

Concept of over adoption

Over adoption is the adoption of an innovation by an individual when experts feel that he or she should reject.

For example of this phenomenon is:-

- ✓ Indiscriminate sinking of shallow tube bells in a limited area, which may result in lowering of the water table, ultimately making the irrigation system ineffective.
- ✓ Excessive use of pesticides.

Prevent over adoption

- ✓ Providing adequate knowledge about the innovation and making the client system aware of it consequences.
- ✓ Appropriate surveillance, training and communication

LECTURE-13

Multi-steps flow of innovation

The **multi-step flow theory** assumes ideas flow from mass media to opinion leaders before being disseminated to a wider population. It is a part of media influence theory. This theory was first introduced by sociologist **Paul Lazarsfeld *et al.*** in 1944 and elaborated by **Elihu Katz and Lazarsfeld in 1955**. It is also known as Diffusion of Innovations theory.

The multi-step flow theory also states opinion leaders are affected more by "elite media" than run-of-the-mill, mass media.

Concept:

The Multistep Flow of Communication theory is an improvement over the Two-Step Flow of Communication Theory. It tries to overcome the limitations of the previous theory. The multiple-step flow goes through several "channels" of interpretation before it finally gets to the intended or targeted user. According to it, opinion leaders interfere between the media's direct message and the audience's reaction to it. Opinion leaders influence others to change their attitude sand behaviors more quickly than formal media because the audience is able to relate to an opinion leader than an article in newspaper or news program.

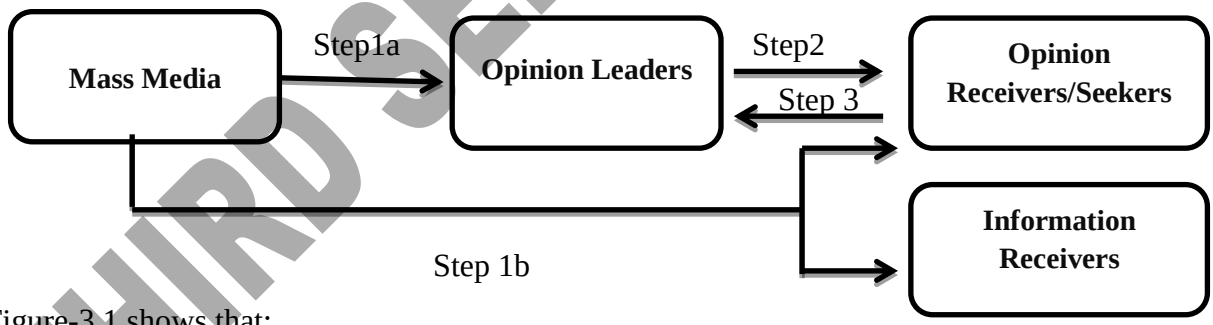

Figure-3.1 shows that:

In Step 1a and 1b information from mass media flows simultaneously to the Opinion Leaders, Opinion Receivers and Information Receivers. Opinion Seekers are those who ask information and advice from Opinion Leaders. Information receivers are those who neither influence nor are influenced by others. Opinion receivers receive information in two ways;

1) They receive information directly from mass media; and

2) They receive "processed and interpreted" version of information from opinion leaders.

In Step 2, both information and influence are transmitted from the Opinion Leaders to the Opinion Receivers.

Step 3 shows the two-way exchange and transfer of information and influence from Opinion Receivers to Opinion Leaders.

LECTURE-14

Influence can be multi directional and not necessarily be downwards. Influence can be upwards or even backwards towards the media as well. The influence could also be peer to peer where audience with similar opinion share insights with each other. Information reached to a member of audience can be direct or second hand, third hand or even fourth hand. Many a times, the information reaches the mass audience in a totally different form from the original piece of information. Everyone who passes the information adds his or her own interpretation to it giving it a new meaning.

According to the multi-step flow theory, opinion leaders intervene between the "media's direct message and the audience's reaction to that message."Opinion leaders tend to have the great effect on those they are most similar to-based on personality, interests, demographics, or socio-economic factors.

These leaders tend to influence others to change their attitudes and behaviors more quickly than conventional media because the audience is able to better identify or relate to an opinion leader than an article in a newspaper or a news program.

This media influence theory shows that information dissemination is a social occurrence, which may explain why certain media campaigns do not alter audiences' attitudes. An important factor of the multi-step flow theory is how the social influence is modified. Information is affected by the social norms of each new community group that it enters. It is also shaped by conflicting views surrounding it.

Opinion Leader: is the degree to which an individual is able to influence other individuals' attitude or overt behavior informally in a desired way with relative frequency.

This informal leadership is not a function of the individual's formal position or status in the system.

LECTURE-15

Models of communication flows

The hypodermic needle model: postulated that the mass media had direct, immediate and powerful effects on a mass audience. It ignored the role opinion leaders.

Later on communication research proved the inadequency of this model by establishing the presence of many intervening variables operating between the communication stimulus and the receiver's response

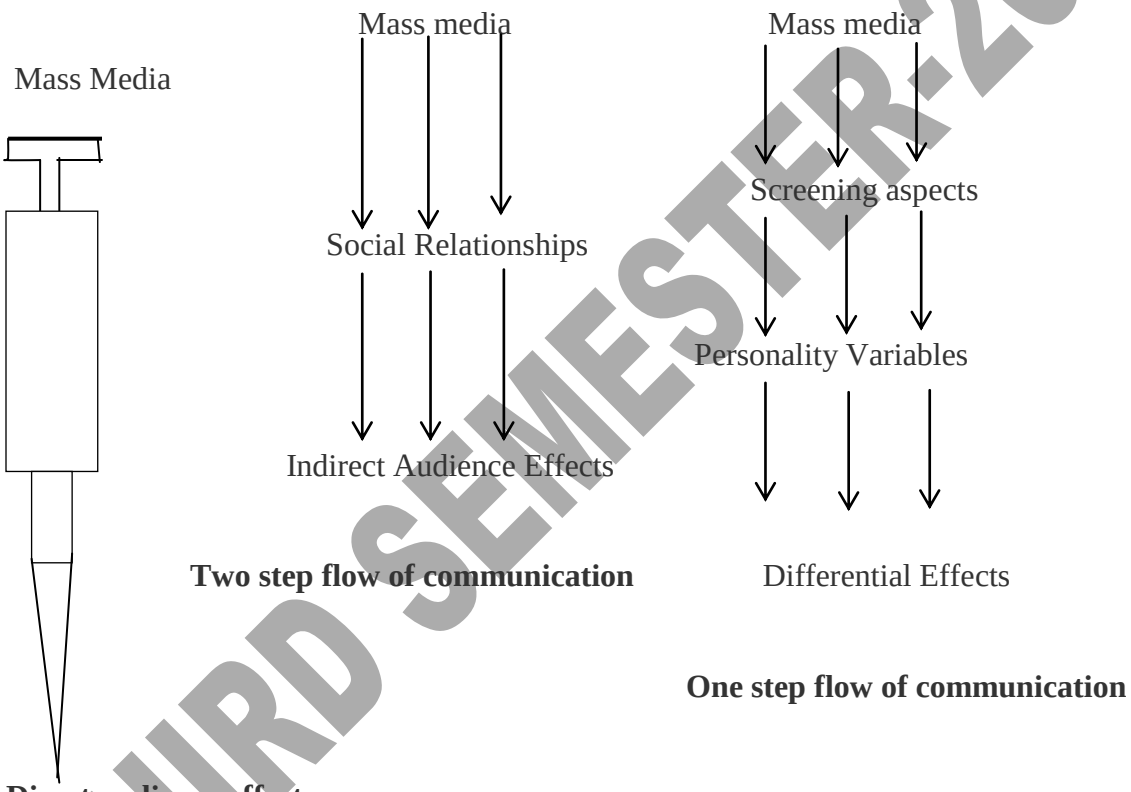

Figure-3.2: Models of communication flows

Two step flow model: In the presidential election of 1940 in the USA, it was discovered that ideas flow from radio and print to active members of a social system called key communicators and from them to less active members of the audience

One-step flow model: the one-step flow model states that mass media channels communicate directly to the mass audience, without the message passing through opinion leaders. However, the message does not equally reach all the receivers, nor has it the same effect on all.

LECTURE-16

Measuring opinion leadership and network link

1. **The socio-metric method:** consists of asking respondents whom they sought for information or advice about a given topic. This technique is a highly valid measure of opinion leadership.
2. **Key informants:** who are especially knowledgeable about the networks in a system.
3. **The self-designating technique:** asks respondents to indicate the degree to which others in the system regard them as influential individuals select themselves to be peer leaders.
4. **Opinion leadership:** can be measured by observation, in which investigator identifies and records the communication behavior in a system.

Monomorphic and Polymorphic Opinion Leadership

Polymorphism: is the degree to which an individual acts as an opinion leader for a variety of topics

Monomorphism: is the degree to which an individual acts as an opinion leader for only a single topic.

LECTURE-17

Concept of homophily and heterophily and their influence on flow of innovations

According to Rogers (1995), a fundamental principle of human communication is that the exchange of ideas occurs most frequently between individuals who are alike, or homophilus.

Homophily is the degree to which pair of individuals who communicate are similar in certain attributes, such as beliefs, education, social status and the like. Homophily phenomenon was given by **Paul F. Lazarsfeld and Robert K. Merton (1964)**

Heterophily is the degree to which pair of individuals who interact are different in certain attributes.

When two individuals share common meanings, beliefs and mutual understanding, communication between them is more likely to be effective. Individuals enjoy the comfort of interacting with others who are similar.

Heterophilus communication between dissimilar individuals may cause cognitive dissonance because an individual is exposed to messages that are inconsistent with existing beliefs and create an uncomfortable psychological state.

More effective communication occurs when two individuals are homophilous one of the most distinctive problems in the communication of innovations is that the participants are usually quite heterophilous.

Semiotics

The meaning of study making and signs and symbols is called semiotics. It investigates into how meaning is created and communicated. Its origins lie in the academic study of how signs and symbols (visual and linguistic) create meaning.

Adoption period

The time taken to pass from the awareness of an innovation to its adoption is called the "adoption period". The major aim of extension and development workers is to shorten the length of the adoption period of an individual so that an innovation will diffuse rapidly within a social system.

LECTURE-18

Innovation decision process

THE INNOVATION-DECISION PROCESS is the process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision.

This process consists of a series of actions and choices over time through which an individual or an organization evaluates a new idea and decides whether or not to incorporate the new idea into ongoing practice. This behavior consists essentially of dealing with the uncertainty that is inherently involved in deciding about a *new* alternative to those previously in existence. It is the perceived newness of the innovation, and the uncertainty associated with this newness that is a distinctive aspect of innovation decision making (compared to other types of decision making).

The model consists of essentially the five functions / stages viz.,

i) Knowledge

ii) Persuasion

iii) Decision

iv) Implementation

v) Confirmation

The model contains three major divisions viz.,

i) Antecedents

ii) Process

iii) Consequences

Antecedents are those variables present in the situation prior to the introduction of an innovation which consist of:

i) Personality characteristics of individuals, like general attitude toward change

ii) Social characteristics of individuals, like cosmopoliteness.

iii) Strength of individual's perceived need for the innovation.

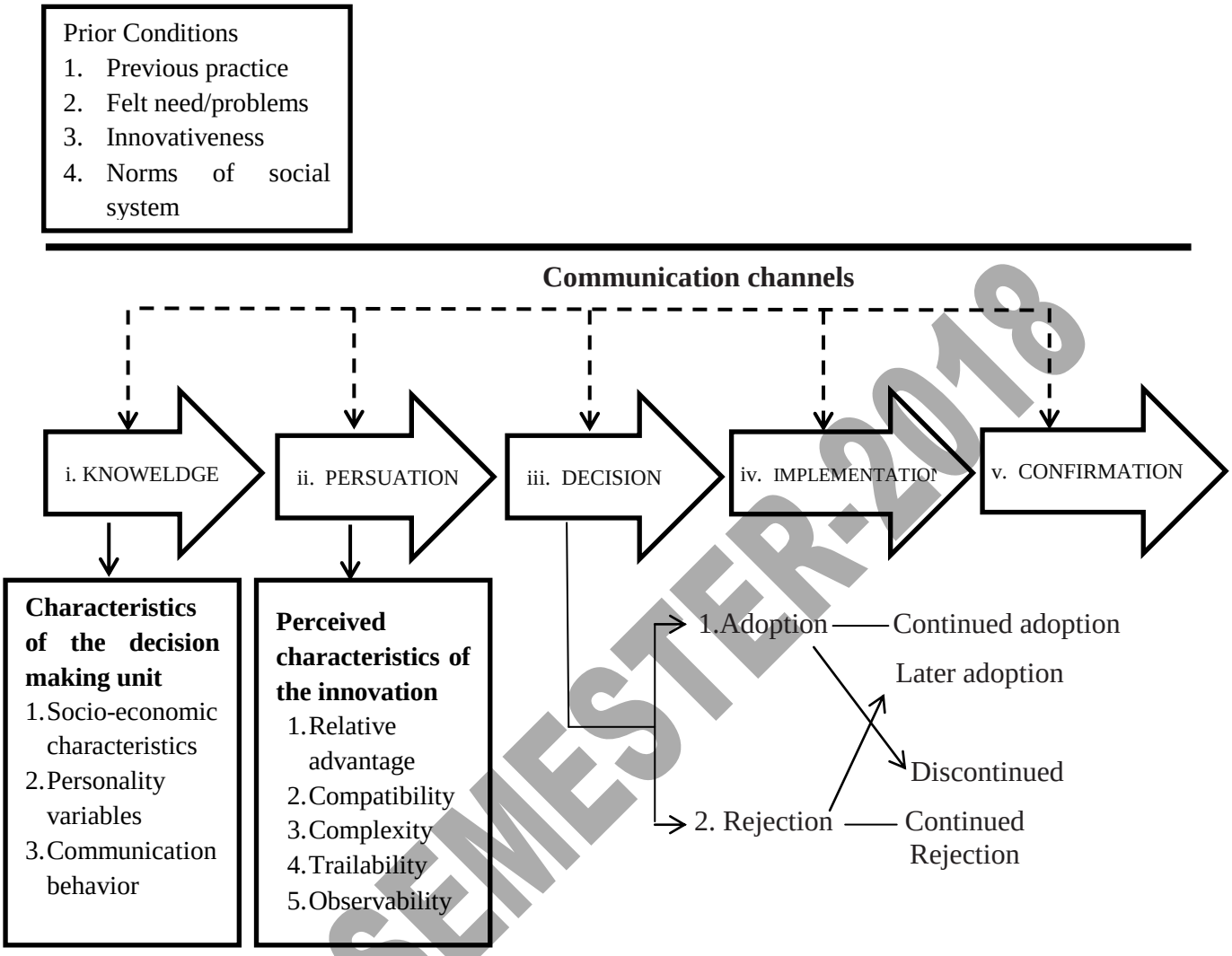

Fig-4.1: Model of Innovation Decision process (Rogers, 1995)

LECTURE-19

1.Knowledge stage: occurs when an individual (or other decision making unit) is exposed to the innovation's existence and gains some understanding of how it functions.

Knowledge function is mainly cognitive or knowing. Knowledge seeking is initiated by an individual and is greatly influenced by one's predispositions.

Selective Exposure vs. Selective Perception

Selective Exposure: Individuals tend to expose themselves to ideas which are in accord with their interests, needs, or existing attitudes. The tendency is called 'selective exposure'.

Example: We are all exposed daily to hundreds of mass media messages about new products. But few of these only register on our minds.

Selective Perception: defined as the tendency to interpret communication message in terms of the individual's existing attitudes and beliefs.

Example: A farmer is used to practice low yielding crop varieties for years. After hearing to the hybrid varieties and their high yielding potential, the farmer would feel it as a need for his situation to adopt it.

A need can motivate an individual to seek information about an innovation and the knowledge of an innovation may develop the need. Questions such as 'what is the innovation?' 'How does it work?' and 'Why does it work?' are the main concerns of an individual about an innovation.

Types of Knowledge

There are three types of knowledge related to innovation viz.,

Awareness-knowledge:- is information that an innovation exists which motivates an individual to seek 'how-to-knowledge and 'principles' knowledge. This type of information-seeking is concentrated at the knowledge stage, but it may also occur at the persuasion and decision stages.

***How-to knowledge*:** consists of information necessary to use an innovation properly. The adopter must understand what quantity of an innovation to secure, how to use it correctly, and so on. In the case of innovations that are relatively more complex, the amount of how-to knowledge needed for proper adoption is much greater than in the case of less complex ideas. When an adequate level of how-to knowledge is not obtained prior to the trial and adoption of an innovation, rejection and discontinuance are likely to result.

Principles knowledge: consists of information dealing with the functioning principles underlying how the innovation works.

Examples: Functioning of vaccinations; Functioning of fertilizer and its relation to plant biology

Mass media channels are relatively more important at the knowledge stage, whereas interpersonal channels are relatively more important at the persuasion stage.

LECTURE-20

2. Persuasion stage: occurs when an individual (or other decision making unit) forms a favorable or unfavorable attitude toward the innovation.

The mental activity at the knowledge stage was mainly cognitive (or knowing), the main type of thinking at the persuasion function is affective (or feeling). Until the individual knows about a new idea, of course, he or she cannot begin to form an attitude toward it. At the persuasion stage

the individual becomes more psychologically involved with the innovation. Personality of individual as well as the norms of the social system may affect information seeking behaviour and its interpretation. Thus, Selective perception is important in determining the individual's behavior at the persuasion stage. At the persuasion stage, a general perception of the innovation is developed. Such perceived attributes of an innovation as its relative advantage, compatibility, and complexity are especially important at this stage.

In developing a favorable or unfavorable attitude toward the innovation, an individual may mentally apply the new idea to his or her present or anticipated future situation before deciding whether or not to try it. This is a kind of **vicarious trial**. The ability to think hypothetically and counter-factually and to project into the future is an important mental capacity at the persuasion stage where forward planning is involved.

The main outcome of the persuasion stage in the decision process is either a favorable or an unfavorable attitude toward the innovation. It is assumed that such persuasion will lead to a subsequent change in overt behavior (that is, adoption or rejection) consistent with the attitude held.

A preventive innovation is a new idea that an individual adopts in order to avoid the possible occurrence of some unwanted event in the future. The undesired event may, or may not, occur if the innovation is not adopted. So the desired consequences of a preventive innovation are uncertain.

3. Decision stage: occurs when an individual (or other decision-making unit) engages in activities that lead to a choice to adopt or reject the innovation at the decision stage in innovation-decision process.

This decision involves an immediate consideration of whether or not to try the innovation, if it is trialable. Most individuals will not adopt an innovation without trying it first on a pilot basis to determine its utility in their own situation. The small-scale trial is often part of the decision to adopt, and is important as a means to decrease the perceived risk of the innovation for the adopter. In some cases innovation cannot be divided for trial, and so it must be adopted or rejected in total. Innovations, which can be divided for trial use, are generally adopted more rapidly. If the innovation has a certain degree of relative advantage in the trial stage, then individual move to an adoption decision.

Rejection is a decision not to adopt an innovation.

1. *Active rejection,* which consists of considering adoption of the innovation (including even its trial) but then deciding not to adopt it.

2. *Passive rejection* (also called non-adoption), which consists of never really considering use of the innovation.

LECTURE-21

4. Implementation stage: occurs when an individual (or other decision making unit) puts an innovation into use. At this stage the individual is generally concerned with where to get the innovation, how to use it and what operational problems will be faced and how these could be solved. Implementation may involve changes in management of the enterprise and/or modification in the innovation, to suit more closely to the specific needs of the particular person who adopts it.

Re-invention

Re-invention often occurs at the implementation stage. Re-invention is the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation. Re-invention often is beneficial to the adopters of an innovation. It reduce mistakes and encourage customization of the innovation to fit it more appropriately to local situations or changing conditions. As a result of re-invention, an innovation may be more appropriate in matching an adopter's preexisting problems and more responsive to new problems that arise during the innovation-decision process.

- ✓ A higher degree of re-invention leads to a faster rate of adoption of an innovation.
- ✓ A higher degree of re-invention leads to a higher degree of sustainability of an innovation.
- ✓ Re-invention can be beneficial to adopter of an innovation

Why does re-invention occur?

1. Innovations that are relatively more complex and difficult to understand are more likely to be re-invented.
2. Re-invention can occur owing to an adopter's lack of detailed knowledge about the innovation.
3. When an innovation is implemented in order to solve a wide range of users' problems, re-invention is more likely to occur.

4. Local pride of ownership of an innovation may also be a cause of re-invention
5. Re-invention may occur because a change agency influences its clients to modify or adopt an innovation.

LECTURE-22

5. Confirmation stage occurs when an individual (or other decision making unit) seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation. The confirmation stage continues after the decision to adopt or reject for an indefinite period in time. Throughout the confirmation function the individual seeks to avoid a state of internal disequilibrium or dissonance or to reduce it if it occurs.

Dissonance: It is an uncomfortable state of mind that the individual seeks to reduce or eliminate. When an individual feels dissonant, he will ordinarily be motivated to reduce this condition by changing his knowledge, attitude, or actions. In the case of innovative behaviour, this may occur in the following three methods of dissonance reduction:

i) When the individual becomes aware of a felt need or problem and seeks information about some means such as an innovation to meet this need. Hence, a receiver's knowledge of a need for innovation can motivate information-seeking activity about the innovation. This occurs at the knowledge stage in the innovation-decision process.

ii) When individual becomes aware of a new idea for which he has a favourable regard, then the individual is motivated to adopt the innovation by the dissonance between what he believes and what he is doing. This behavior occurs at the decision stage in the innovation-decision process.

iii) After the innovation-decision to adoption, the individual may secure further information which persuades him that he should not have adopted. This dissonance may be reduced by discontinuing the innovation. Or if he originally decided to reject the innovation, the individual may be come exposed to pro-innovation messages, causing a state of dissonance which can be reduced by adoption. These types of behaviour (discontinuance or later adoption) occur during the confirmation function in the innovation decision process.

Discontinuance: Discontinuance is a decision to reject as innovation after having previously adopted it. Discontinuance also may take three forms.

i) ***Replacement discontinuance:*** It is a decision to reject an idea in order to adopt a better idea that supersedes.

Example: Hybrid variety over normal variety.

ii) *Disenchantment discontinuance*: It is a decision to reject an idea as a result of dissatisfaction with the performance.

Example: Crop varieties generally deteriorate after number of years. They are then replaced by superior varieties, if available, or may not be cultivated at all.

iii) *Forced Discontinuance:* Individuals are forced to discontinue the existing practices because of Government Policies.

Example: The Government has banned the use of chemicals like D.D.T. and B.H.C.

Such dissatisfaction may come about because the innovation is inappropriate for the individual and does not result in a perceived relative advantage over alternatives.

Later adopters are more likely to discontinue innovations than are earlier adopters.

High discontinuers are characterized by less formal education lower socio-economic status and less change agent contact which are the opposite of the characteristics of innovators

Discontinuers share the same characteristics as laggards

LECTURE-23

Innovation-Decision Period: It is the length of time required to pass through the innovation – decision process. The time elapsing from awareness-knowledge of an innovation to decision for an individual is measured in days, months, or years. This period is thus a gestation period in which a new idea is fermenting in the individual's mind. Earlier adopters have a shorter innovation – decision period than later adopter

Types of innovation decisions

The social system has yet another important kind of influence on the diffusion of new ideas. Innovations can be adopted or rejected (1) by individual members of a system, or (2) by the entire social system, which can decide to adopt an innovation by a collective or an authority decision.

1. **Optional innovation-decisions** are choices to adopt or reject an innovation that are made by an individual independent of the decisions of other members of the system. Even in this case, the individual's decision may be influenced by the norms of his system and by his interpersonal networks. The distinctive aspect of optional innovation-decisions is that the individual is the unit of decision making, rather than the social system.

2. Collective innovation-decisions are choices to adopt or reject an innovation that are made by consensus among the members of a System. All of the units in the system usually must conform to the system's decision once it is made.

3. Authority innovation-decisions are choices to adopt or reject an innovation that are made by a relatively few individuals in a system who possess power, status, or technical expertise. The individual member of the system has little or no influence in the innovation decision; he or she simply implements the decision.

4. Contingent innovation-decisions are choices to adopt or reject that can be made only after a prior innovation-decision. For example, an individual member of a social system may be free to adopt or not to adopt a new idea only after his system's innovation-decision.

Collective and authority decisions are probably much more common than optional decisions in formal organizations, such as factories, schools, or government organizations, in comparison with other fields like agriculture and consumer behavior, where many of the innovation-decisions by farmers and consumers are optional.

Generally, the fastest rate of adoption of innovations results from authority decisions (depending, of course, on how innovative the authorities are). Optional decisions can usually be made more rapidly than collective decisions. Although made more rapidly, authority decisions are often circumvented during their implementation.

The social system is involved directly in collective, authority, and contingent innovation-decisions, and perhaps indirectly in optional innovation-decisions. There is a final way in which the social system plays a role in the diffusion of innovations: it is involved in the consequences of innovations

LECTURE-24

Consequences of innovation decision

A social system is involved in an innovation's consequences because certain of these changes occur at the system level, in addition to those that affect the individual.

Consequences are the changes that occur to an individual or to a social system as a result of the adoption or rejection of an innovation.

Desirable versus *undesirable* consequences, depending on whether the effects of an innovation in a social system are functional or dysfunctional.

Direct versus *indirect* consequences, depending on whether the changes to an individual or to a social system occur in immediate response to an innovation or as a second-order result of the direct consequences of an innovation.

Anticipated versus unanticipated consequences, depending on whether the changes are recognized and intended by the members of a social system or not.

References:

Johnson G. L. and Haver C. B. 1955. Decision-Making Principles in Farm Management. Kentucky Agricultural Experiment Station Bulletin 593, Lexington.

Katz E. and Lazarsfeld P. 1955. *Personal Influence,* New York: The Free Press.

Lazarsfeld P.F. Berelson B. and Gaudet H. 1944. *The people's choice: How the voter makes up his mind in a presidential campaign*. New York: Columbia University Press.

North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices 1955. How Farm People Accept New Idea. Iowa Agricultural Extension Service, Special Report 15, Ames, Iowa.

Ray G. L. 2005. Extension Communication and Management.Kalyani Publ. Reddy AA. 1987. Extension Education. Sree Lakshmi Press, Bapatla.

Reddy A. A. 1987. *Extension Education*. Sree Lakshmi Press, Bapatla.

Rogers E.M. 1962, 1971, 1983, 1995, 2003. Diffusion of Innovations. The Free Press, New York.

Ryan B. and Gross N. C. 1943. The Diffusion of Hybrid Corn in Two Iowa Communities. Rural Sociology, 8.

Singh Y. P. 1965. A Study of Communication Networks Sequential Adoption and Key Communicators. Ph.D. Thesis, Division of Agricultural Extension, IARI, New Delhi.

Wilkening E. A. 1953. Adoption of Improved Farm Practices as Related to Family Factors. Wisconsin Experiment Station Research Bulletin 183, Wisconsin.