Diffusion and Adoption of Homestead Technologies

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EECM

TEACHING MANUAL

Diffusion and Adoption of Homestead Technologies

HEM-102

3 (2+1)

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Course Title: Diffusion and Adoption of Homestead Technologies

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THEORY

- Concept and elements of diffusion process.
- Innovation–decision process, types of innovation–decision, consequences of innovations.
- Adoption: meaning, definition, adoption process, factor affecting adoption and innovation – decision process and constraints.
- Different terms used in diffusion of innovation and adoption process: Rate of adoption, over adoption, innovativeness, dissonance, rejection, discontinuance.
- Adopter categories: concept and types.
- Homestead technology: concept and its relevance to innovation – decision process different channels of communication and their characteristics.
- Social change: concept, theories, dimensions and factors. Change agents and opinion leader; change proneness – acceptance and resistance to social change.
- Different homestead technologies with special reference to Home Science.

Practical

- Collection of homestead technologies.
- Adoption in localities- Observation,
- Visit to different entrepreneurs with adopted home stead technologies for business enterprise. Visit to different successful SHGs,
- Categories of adopters among SHG members.
- Analysis and presentation of report.
- Identification of change agents in a locality, Presentation of report.

LECTURE-1

CONCEPT AND ELEMENTS OF DIFFUSION PROCESS

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Diffusion is the special type of communication concerned with the spread of messages that are new ideas.

Diffusion of Innovation Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system.

Diffusion is a special type of communication, in that the message content of communication that gives diffusion its special character. The diffusion of innovations is essentially a social process in which subjectively perceived information about a new idea is communicated. The new idea means that some degree of uncertainty is involved in diffusion. However, a technology based innovation or need based developmental idea / practice embodies information that reduces uncertainty about cause – effect relationship in solving a developmental problem. Diffusion of innovations also brings in social change – defined as the process by which alteration occurs in the structure and function of a social system. When new ideas are invented, diffused, and adopted or rejected leads to certain consequences which bring in social change.

Element of Diffusion

Key Elements in Diffusion Process	
Element	**Meaning**
Innovation	Rogers defines an innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption.
Communication channel	A communication channel is the means by which messages get from one individual to another.
Time	The innovation-decision period is the length of time required to pass through the innovation-decision process.
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.

Elements in the diffusion of innovations:

The four main elements in diffusion of innovations are

1. Innovation
2. Communication channels
3. Time
4. Social system.

The description for these elements is presented below:

1)**The innovation:**

An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption. The perceived newness of the idea for the individual determines his or her reaction to it. The "newness" aspect of an innovation may be expressed in terms of knowledge, persuasion or a decision to adopt.

An innovation does not diffuse at the same rate. An innovation which represents only a slight modification of an existing idea or practice will obviously diffuse at a faster rate than the one which represents a significant departure from it. Some of the important attributes of an innovation which influence the rate of adoption are:

a. **Relative advantage**:

It is the degree to which an innovation is perceived as better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, but social-prestige factors, convenience and satisfaction are also often the important components.

b. Compatibility:

It is the degree to which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential adopters.

c. **Complexity:**

It is the degree to which an innovation is perceived as difficult to understand and use. In general, new ideas that are simpler to understand will be adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

d. **Trialability:**

It is the degree to which an innovation may be experimented with on a limited basis. An innovation that is trialable represents less uncertainty to the individual who is considering it for adoption, as it is possible to learn by doing.

e. **Observability:**

It is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt.

2) Communication channels:

A communication channel is the means by which messages get from one individual to another. The following classification of channels would help the communicator to use them appropriately:

i) **Interpersonal channels** - It refers to those which are used for face to face communication between two or more individuals.

ii) **Mass media channels** - These enable the messages to reach a larger, diverse audience simultaneously in a relatively shorter time. e.g.: Radio and T.V.

iii) **Localite channels** - They originate within the social system of the receiver e.g: neighbours, relatives, opinion leaders etc.

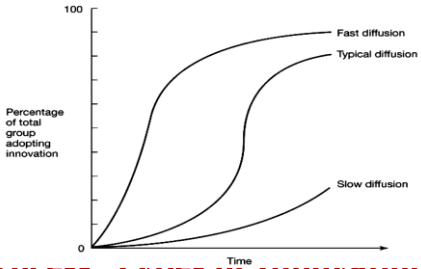
iv)**Cosmopolite channels** - They originate outside a particular social system. eg: Extension worker, sales personnel etc.

3. Time:

It is an important element in the diffusion process. Time is an obvious aspect of any communication process. Time does not exist independently of events, but it is an aspect of every activity. The time dimension is involved in diffusion (i) in the innovation - decision process, (ii) in the innovativeness of an individual or other unit of adoption, and (iii) innovation's rate of adoption in a system.

4. Social System:

It 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. The social system constitutes a boundary within which an innovation diffuses.



Innovation–Decision Process, Types of Innovation–Decision, Consequences of Innovations

Innovation

An innovation is an idea, practice, or object that is perceived as new or an improvement over the existing one by the individual or members of a social system. If the idea seems new, it is an innovation. As the innovation may represent a slight modification of, or a significant departure from, the existing idea or practice. The 'idea' constitutes the central element of an innovation which often manifests itself in a material or behavioural form.

Innovation–Decision Process

It is the mental process through which as individual or other decision making unit passes from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision.

According to Rogers (1983, 1995), 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 and use 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 the ongoing system. The perceived newness is a distinctive aspect of innovation-decision making, compared to other types of decision-making.

Innovation-decision is a process that occurs over time and is conceptualized to have five stages.

1. **Knowledge:** Innovation-decision process begins with knowledge stage, which commences when an individual is exposed to the innovation's existence and gains some understanding of how it functions. Knowledge function is mainly cognitive or knowing. It is essentially an information seeking and information processing activity in which an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation. There are three types of knowledge about an innovation, Awareness knowledge means information that an innovation exists; How-to-knowledge consist of information necessary to use an innovation properly and ; Principle knowledge which consist of information dealing with the functioning principles underlying how an innovation works. Knowledge seeking is initiated by an individual and is greatly influenced by one's predispositions. Generally, individuals

tend to expose themselves to choose ideas which are in accord with their interests, needs, or existing attitudes. The tendency is called “Selective exposure”. For example, a farmer can drive past 100 miles of hybrid corn in India and never “see” the innovation. Likewise, we are all exposed daily to hundreds of mass media messages about new products. But few of these register on our minds. Selective exposure and selective perception act as particularly tight shutters on the windows of our minds in the case of innovation messages, because such ideas are new.

2. **Persuasion:** At the persuasion function in the innovation-decision process the individual forms a favorable or unfavorable attitude toward the innovation. Whereas the mental activity at the knowledge function 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 cannot begin to form an attitude toward it. In developing favorable or unfavorable attitude toward an innovation, an individual may mentally apply the new idea to his present or anticipated future situation before deciding whether or not to try it. At the persuasion stage the individual becomes more psychologically involved with the innovation. Now he actively seeks information about the idea. His personality as well as the norms of his social system may affect where he seeks information, what messages he receives, and how he interprets the information he receives.

3. **Decision:** At the decision stage in innovation-decision process, the individual engages in activities which lead to a choice to adopt or reject the innovation. Actually the entire innovation-decision process is a series of choices at each function. For instance, in the knowledge function the individual must decide which innovation messages to attend to and which ones to disregard. In the persuasion function he must decide to seek certain messages and to ignore others. But in the decision function the type of choice is different from those previous; it is a decision between two alternatives, to adopt or reject a new idea. Adoption is a decision to make full use of an innovation as the best course of action available. Rejection is a decision not to adopt an innovation. One way to cope with inherent uncertainty about an innovation’s consequences is to try out the new idea on a partial basis. This small scale trial is often an important part of the decision to adopt. The innovation decision process can just as logically lead to a rejection decision as to adoption. Two different types of rejections are:

• Active rejection, which consist of considering adoption of the innovation (including its trial) but then deciding not to adopt it.

• Passive rejection (also called non adoption) which consist of never really considering the use of an innovation.

4**. Implementation**: Implementation occurs when an individual or other decision making unit puts an innovation into use. Until implementation stage, the innovation decision process has been a strictly mental exercise of thinking and deciding. But implementation involves overt behaviour change as the new idea is actually put into practice. 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. Here the role of change agent is mainly to provide technical assistance to the client as he begins to use the innovation. The implementation stage may continue for a lengthy period of time, depending on the nature of the innovation. Eventually a point is reached at which the new idea becomes institutionalized as a regular part of an adopter's ongoing operations. The innovation loses its distinctive quality as the separate identity of the new idea disappears. This point is considered the end of implementation stage.

5. Confirmation: Most of the researchers indicated that a decision to adopt or reject is not the terminal stage in the innovation-decision process. Human mind is in a dynamic state and an individual constantly evaluates the situation. If the individual perceives that the innovation is consistently giving satisfactory or unsatisfactory results the person may continue to adopt or reject the innovation as the case may be. At the confirmation function the individual seeks reinforcement for the innovation-decision he has made, but he may reverse his previous decision if exposed to conflicting message 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: Human behavior change is often motivated in part by a state of internal disequilibrium or dissonance, an uncomfortable state of mind that an individual seeks to reduce or eliminate. A dissonant individual is motivated to reduce this condition by changing his or her knowledge, attitude or actions (Festinger, 1957). In case of innovative behavior, this dissonance reduction may occur: When the individual becomes aware of a need and seeks information about an innovation to meet this need. Here, a receiver's knowledge of a

need for innovation can motivate an individual's information seeking activity about the innovation. This behavior occurs at the knowledge stage in the innovation decision process. When the individual knows about a new idea and has a favorable attitude toward it but has not adopted. Then the individual is motivated to adopt the innovation by dissonance between what he or she believes versus what he or she is actually doing. This behavior occurs at the decision and implementation stages in innovation decision process. After the innovation decision to implement an innovation, when the individual secures further information that persuades him or her should not have adopted. This type of dissonance may be reduced by discontinuing the innovation.

Discontinuance: Discontinuance is the decision to reject an innovation after having previously adopted it. Two types of discontinuance are (1) Replacement and (2) Disenchantment. Replacement discontinuance is a decision to reject an idea in order to adopta better idea that supersedes it. Disenchantment discontinuance is a decision to reject an idea as a result of dissatisfaction with its performance. Such dissatisfaction may come about because the innovation is inappropriate for the individual and does not result in a perceived relative advantage over alternatives.

Over adoption: Some farmers continue to adopt an innovation, rather vigorously, when experts (Scientists or extension officers) feel that it should not be so done. This is over adoption. Over adoption produces negative effect and may cause distortion or deterioration of the related systems. In sufficient knowledge about an innovation and inability to predict its consequences generally leads to over adoption. As a change agent, your role is to prevent the excessive adoption of the innovation by providing adequate knowledge about the innovation through training and communication.

Types of Innovations

There are three main types of innovations that are diffused in different ways:

Continuous Innovation: This type of innovation is a simple changing or improving of an already existing product where the adopter still uses the product in the same fashion as they had before. An example of a continuous innovation is now seen in the automobile industry as it continues to change and develop.

Dynamically Continuous Innovation: Here the innovation can either be a creation of a new product or a radical change to an existing one. Here the consumption patterns of people are altered some. An example of this type of innovation would be compact discs.

Discontinuous Innovation: This is a totally new product in the market. This is the big idea innovation. In this situation, because the product has never been seen before, there are total changes to consumers buying and using patterns.

Two factors determine what type a particular decision is: Whether the decision is made freely and implemented voluntarily,

- Who makes the decision?

Based on these considerations, three types of innovation-decisions have been identified within diffusion of innovation.

Type	**Meaning**
Optional Innovation- Decision	This decision is made by an individual who is in some way distinguished from others in a social system
Collective Innovation-Decision	This decision is made collectively by all individuals of a social system.
Authority Innovation-Decision	This decision is made for the entire social system by few individuals in positions of influence or power.

Consequences of Innovations: Consequences of Innovations: 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 defined as the changes that occur to an individual, organization or social system as a result of the adoption or rejection of an innovation. Consequences can be:

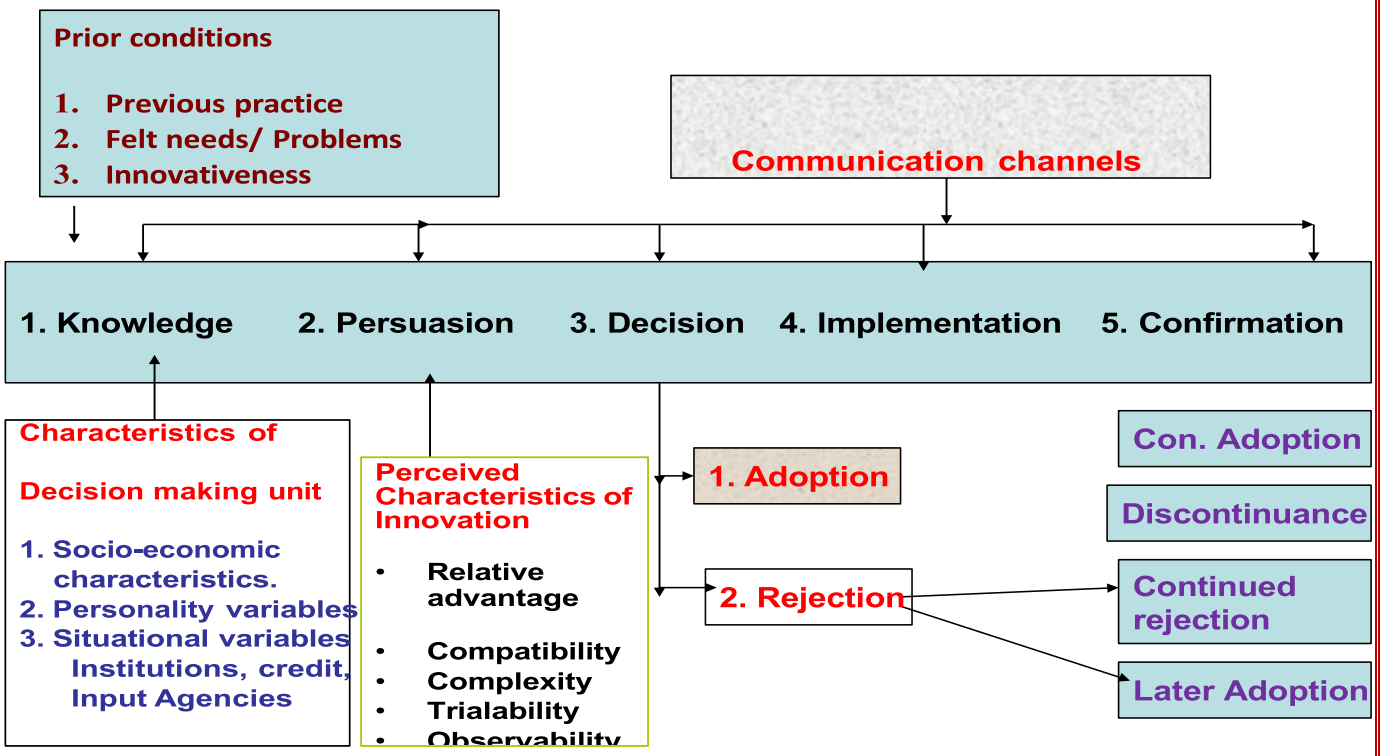
(1) Desirable versus undesirable consequences depending upon whether the effects of an innovation are functional or dysfunctional,

(2) Direct or Indirect Consequences depending upon whether the changes in response to the innovation are of first order or second order.

(3) Anticipated or unanticipated Consequences, depending upon whether the changes are recognized by members of an organization as the intended consequences of the innovation.

Change agents usually introduce innovations into a client system that they expect will have consequences that will be desirable, direct and anticipated.

Paradigm on Stages in the Innovation - Decision Process



Factors that affects diffusion:

1**. Norms**: Norms are the acceptable forms of behaviour they may be considered as the limits within which an individual may act to achieve his purpose or goal. The norms in a social system may be traditional and discourage the adoption of new ideas or they may be modern and encourage the use of innovations.

2. **Opinion leaders**: The individuals in a social system, who often tell many others about new ideas are called opinion leaders. Opinion leaders are defined as "those individuals from whom others seat information and advice"

3. **Cosmo politeness**: Cosmopolite person receive new idea from a source outside of the social system. Example: Professional persons, opinion leaders.

4. **A change agent**: A change agent is a professional persons who attempts to influence adoption decisions in a direction that he feels in desirable. A change agent usually seeks to secure adoption of new ideas.

5. **Innovativeness**: It is the degree to which an individual is relatively earlier in adopting new ideas than other member of this social system.

Difference between diffusion and communication Diffusion Communication

1 It is a special types of communication	1 It is a process of exchange of ideas between two persons
2 It may cause more uncertainty	2 Uncertainty is less
3 Diffusion always focuses on social change	3 Communication just informs and does not focus a social change
4 It always concerns both the planned and spontaneous spread of new ideas	4 It doesn't concern so
5 It involves several channels cycles to get the information across	5 It involves only one channel or means to make the information across the audience
6 It takes long time to get the technology spread among the social system	6 It takes shortest time to reach a longer number of audience

Difference between Adoption and Diffusion:

Diffusion

1. Diffusion is the process of communicating the new idea into the members of social system.
2. Diffusion occurs among the units in a social system.
3. Diffusion is the initiating factor of a change.
4. Diffusion is carried out by extension worker, opinion leader, change agents.
5. Innovation, channels, time and social systems are the elements in the diffusion process.

Adoption

1. Adoption is a decision to make full use of a new idea as the best course of action available.
2. Adoption takes place within the mind of an individual.
3. Adoption is the end point indicator for a change.

4. Adoption is carried out only by the members of social system.
5. Awareness, interest, evaluation, trial and adoption are the elements in adoption process.

Check Your Progress

I. Write the meaning of diffusion and diffusion process.

II. What do you mean by adoption of innovation?

III. What is adoption process?

IV. Name the four elements of diffusion process

V. What do you mean by social system?

VI. Knowledge of social structure is important to consider while studying diffusion. Do you agree with this statement? Support your answer.

LECTURE-3

Adoption: Meaning, Definition, Adoption Process, Factor Affecting Adoption and Innovation – Decision Process and Constraints.

Adoption is a decision to make full use of an innovation as the best course of action available. **Rejection** is a decision not to adopt an innovation. The small - scale trial is often part of the decision to adopt, and is important as a means to decrease the perceived uncertainty of the innovation for the adopter. The "Adoption process" is a decision – making process which goes through a number of mental stages before making a final decision to adopt an innovation.

Adoption Process: Adoption is not an instant decision. An individual passes through several mental stages in adopting certain idea. Adoption is a process through which an individual passes from first hearing of an innovation to its final adoption.

Deway (1910) seems to be the first who proposed concept of stages in thinking. There are definite units that are linked together so that there is a sustained movement to a common end.

Ryan and Gross (1943): Adoption of new ideas proceeds in 4 distinct stages:

(a) Awareness,

(b) Conviction,

(c) Trial and

(d) Acceptance and Complete Adoption.

Pederson (1951): A sequence of events leads to adoption. Instead of acceptance and adoption, he used interchangeable terms without much distinction.

(a) Awareness,

(b) Conviction,

(c) Trial,

(d) Adoption.

Wilkening (1953) described the adoption of 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 thought decisions.

He identified four adoption stages:

I. Awareness

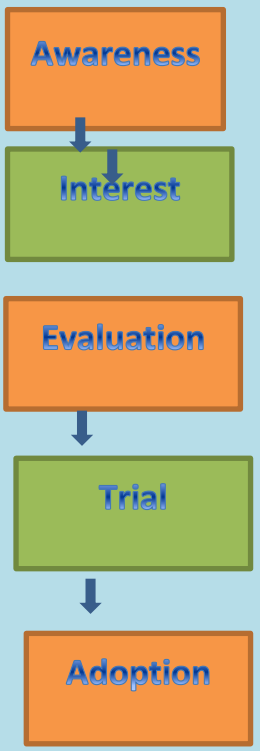
II. Obtaining information

III. Conviction and trial, and

IV. Adoption

It indicates that initial knowledge of a practice, its mental acceptance as a good idea, its use on a trial basis and finally its full adoption. Wilkening's first two stages were later extended into three and the resulting five stages identified by the North Central Rural Sociology Sub Committee for the study of Diffusion of Farm practices (1955) are widely accepted and received worldwide attention. The five stages of adoption process are:

i. Awareness
ii. Interest
iii. Evaluation
iv. Trial
v. Adoption

Stages **Awareness** - the individual is exposed to the innovation but lacks complete information about it. **Interest** - the individual becomes interested in the new idea and seeks additional information about it **Evaluation** - individual mentally applies the innovation to his present and anticipated future situation, and then decides whether or not to try it **Trial** - the individual makes full use of the innovation Adoption - the individual decides to continue the full use of the innovation **Adoption** - the individual decides to continue the full use of the innovation	

Let us briefly discus about these five stages.

Awareness Stage:

Adoption This is the starting stage wherein the individual comes to know the existence of the new idea but (s)he doesn't have full information about the idea. At this stage individual is aware of the idea, but lacks detailed information about it.

Example: Individuals may know MGNREGA only the name and may not know what MGNREGA is, its role in rural employment generation and development.

Interest Stage: The individual develops interest in the innovation / idea / practice and seeks additional information about it either from extension officer or from fellow community members or from any source, which he feels credible. That means the individuals at the interest stage acquires more information about an innovation or idea. They want to know, what the innovation/idea is, how it works and what its potentialities are.

Evaluation Stage: The individual here makes mental application of the new idea in the present and anticipated future situations and decides whether or not to try it. The individual at this stage judges the utility of the innovation. (S)he makes an assessment whether the idea is applicable to own situation and if applied what would be the result.

Example: Individual after acquiring more information about MGNREGA at the interest stage, (s)he mentally judge MGNREGA's contribution to his / her employment and livelihood security.

Trial Stage: At the first instance, people may not take up any new idea / an innovation right away on a large scale because (s) he doesn't want to take risk even though the potential of the idea has been proved. They actually applies the new idea on a small scale in order to determine its utility or feasibility or applicability in own situation. Even though, people take a decision to try the idea by virtue of its plus points or merits, generally the effectiveness of the idea is tested by taking it on a small scale.

Adoption Stage: Innovation Process for Development Being satisfied with the performance of the new idea tested on small scale in their own situation, the people uses the new idea continuously on a full scale. Trial may be considered as the practical evaluation of an innovation. Based on feedback from trial, people take final decision and apply the innovation in a scale appropriate to own situation on a continued basis.

The above five stages of adoption are dynamic and not static. The same five stages do not occur with all the adopters and 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. If the people have confidence in the extension and development worker and their recommendation, they may jump from evaluation to adoption stage. There are no clear-cut differences and sometimes the whole process is capsule and looks like a unit act.

Factors Affecting Adoption of an Innovation

Factors Affecting the Diffusion and Adoption of New Practices: Following are the different factors which affect the diffusion of innovations or new practices:

(A**) Social Factors;** These include

(1**) Locality groups:** Groups are composed of people in a specific geographical area who have developed a feeling of belonging and who tend to associate with each other. Such groups are of two types - Neighborhood and communities. Neighborhoods establish norms which serve as guiding principles for those who live by norms of the larger society and. groups. Group pressures operate to keep people in line with local expectations regarding many aspects of life, including the adoption of farm practices. Adoption rates are higher in communities favorable to change than those who are not

(2) **Family:** Family members often serve as consultants in decisions to adopt new farm and home practices. Children in school are frequently mentioned by parents as sources of farm information. Wives pass on what they hear and see to their husbands.

(3**) Social cliques**: Social cliques are composed of small number of persons who accept each other as social equals and associate as close friends. Clique members communicate the farm and home information to these members.

(4) **Reference group**: Reference group is a group to which an individual refers when forming an opinion, making a judgment or deciding to act. Neighborhood and family constitute the most important reference group in farm practice adoption behavior.

(5) **Formal groups:** These include elected officers and committees. Those organized for the purpose of disseminating farm information's are likely to contribute directly to the end. All provide opportunities for meeting others who have similar interest and problems. Those most active in formal groups use more improved farm practices and are more exposed to a variety of direct sources for farm information. There is positive correlation between participation in formal social groups and adoption of new farm practices.

(B) **Cultural Factors:**

(1**) Culture:** Culture is the total man made part of man's environment. Behavior is often

so distinctly modeled in accordance with a cultural pattern. Culture is also a partial determinant of what will be perceived and how.

(2) **Values and attitudes:** Values may be regarded as goal or objects to which people orient their thinking, action and feelings. Attitude may be thought of as predisposition to act, perceive, think and feel in relation to something. Family values found to be positively related to farm practice. (C) Personal Factors:

(1) **Age:** Older farmers seem to be somewhat less inclined to adopt new farm practices than younger ones. Highest adoption of practices was found at middle age.

(2**) Education:** Farmers with high educational level adopt more improved farm and home practices than illiterate farmers.

(3) **Psychological characteristics**: Includes rationality, mental flexibility, and dogmatism, orientation towards farming and innovation proneness. The farmers who have such characteristics adopt more improved farm practices.

(D**) Situational Factors:**

(1) **Farm income:** Farmers having more farm income will adopt more farm practices than the farmers with low farm income.

(2**) Farm size:** Many technological advances require large size farm. Farmers with large size farms adopt more advance farm practices than small size holders.

(3) **Tenure status**: Owners can make decision to adopt new farm practices, but tenants must often obtain the concurrence of the owner before trial or use. Consequently, adoption rates are higher for farm owners than for those who rent their farms.

(4**) Sources of farm information used**: Farmers will adopt more improved agricultural practices than the farmers who have not used the sources of farm information.

(5) **Standard of Living:** Farmers having higher level of living will adopt more improved farm practices than others whose level of living is low.

Innovation Decision Process (IDP): It is the mental process through which an individual passes from first knowledge of an innovation to forming an attitude towards the innovation to a decision to adopt implementation of new idea and confirmation of his decision. IDP differs from Adoption: ⎫ Adoption process implies that all the individuals adopt the innovation rather than reject it. In IDP innovation may be rejected. ⎫ Adoption process model does not allow the behavior which takes place after adoption, i.e.,

(i) Continued adoption, and

(ii) Rejection. IDP considers the after effects of adoption. ⎫

Adoption process model fails to recognize the element of theory such as learning theory, decision - making theory, etc. Though it is concerned with learning theory it has not given enough consideration to the decision - making theory and the theory of cognitive dissonance.

Lecture-4

Different terms used in diffusion of innovation and adoption process: Rate of adoption, over adoption, innovativeness, dissonance, rejection, discontinuance.

Diffusion: Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Diffusion is the special type of communication concerned with the spread of messages that are new ideas.

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. Technology usually has two components namely hardware and software.

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.

Reinvention: Is the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation.

Communication channels: 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.

Time: Time is an important element in the diffusion process. In fact, most other behavioural 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.

Social Change: Is a process in which alteration that occurs in the structure and function of a social system. A social system may be family, community or village

Social structure: Social structure as the patterned arrangements of the units in a system.

Social system: A social system is a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. A system has structure, defined as the patterned arrangements of the units in a system, which gives stability and regularity to individual

behavior in a system. The social and communication structure of a system facilitates or impedes the diffusion of innovations in the system.

Adoption: It is the decision to make full use of an innovation as the best course of action available. In this stage the rural child may actually want to work on the computer the rural household decides to buy to the refrigerator or AC for use in the homes. If decision has been taken that they would not use the computer or buy the refrigerator or AC it is termed as rejection.

Adoption process- Adoption process is the mental process through which an individual passes from first hearing about an innovation to final adoption."

Adoption period- "Adoption period is the length of time required for an individual to pass through the adoption process from awareness to adoption."

Rate of Adoption: it is the relative speed with which an innovation is adopted by the member of a social system.

Discontinuance- Discontinuance is a decision to case use of an innovation after previously adopting it. Discontinuance is thus one type of rejection. Rejection is a decision not to adopt an innovation. Innovativeness- Innovativeness is defined as the degree to which an individual is relatively earlier in adopting new ideas than other members of his social system

Localite: Sources of information within the social system like family, neighbors, friends and local leaders. Cosmopolite: Sources of information outside the social system like mass media, extension functionaries and other change agents.

Homophily: Is the degree to which pairs of individuals who interact are similar in certain attributes, such as beliefs, education, social status etc. usually when individuals interact with others they tend to interact with those people who are most like himself or herself.

Heterophily: It is the degree to which pairs of individuals who interact are dissimilar or different in their characteristics. 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. Discontinuance: previously adopted it. Discontinuance is the decision to reject an innovation after having

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

Change agent: Is an individual who attempts to influence client's innovation-decisions in direction that is deemed desirable by a change agency. Norms: Norms are the established behaviour patterns for the members of a social system.

Overtime: Overtime is the time required to adopt from its origin.

Norms- Defined simply are the acceptable forms of behavior they may be considered as the limits within which an individual may act to achieve his purpose or goal.

Opinion leaders- The individuals in a social system, who often tell many others about new ideas, are called opinion leaders. Opinion leaders are defined as "those individuals from whom others seek information and advice."

Cosmopoliteness- Comeliness is defined "It is the degree to which an individuals orientation is external to a particular social system."

Over Adoption : If people continue to adopt an innovation, rather vigorously, when extension workers feel that it should not be so done is over adoption. Over adoption produces negative effect and may cause distortion or deterioration of the related systems. Inadequate knowledge about an innovation and inability to predict its consequences generally leads to over adoption.

Example 1. Indiscriminate sinking of shallow tube wells in a limited area, which may result in lowering of the water table, ultimately making the irrigation system ineffective. Example

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:

Rejection:

Rejection of an Innovation Rejection is decision not to adopt an innovation. This may be of two types: Active rejection : When an individual rejects after adopting the innovation including even its trial is called active rejection Passive rejection : A simple non- adoption is called passive rejection.

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.

Lecture-5

Adopter categories: concept and types.

The individuals in a social system do not adopt an innovation at the same time. Rather, they adopt in an over-time sequence, so that individuals can be classified into adopter categories on the basis of when they first begin using a new idea. The rate of adoption is defined as the relative speed at which participants adopt an innovation. Rate is usually measured by the length of time required for a certain percentage of the members of a social system to adopt an innovation. The rate of adoption for innovations is determined by an individual's adopter category. In general, individuals who first adopt an innovation require a shorter adoption period (adoption process) when compared to late adopters. There are different categories of individuals. According to Rogers (1971), an individual based on their innovativeness can be classified as:

1. **Innovators (Venturesome)**
2. **Early adopters (Respectable)**
3. **Early majority (Deliberate)**
4. **Late majority (Skeptical)**
5. **Laggards (Traditional)**

Innovators

All individuals in a social system do not adopt an innovation at the same time.

• Rather, they adopt in an ordered time sequence.

• Adopters may be classified into different adopter categories on the basis of their innovativeness i.e. when they first begin using new idea

• INNOVATIVESS is the degree to which an individual is relatively earlier in adopting new ideas than other members of a system.

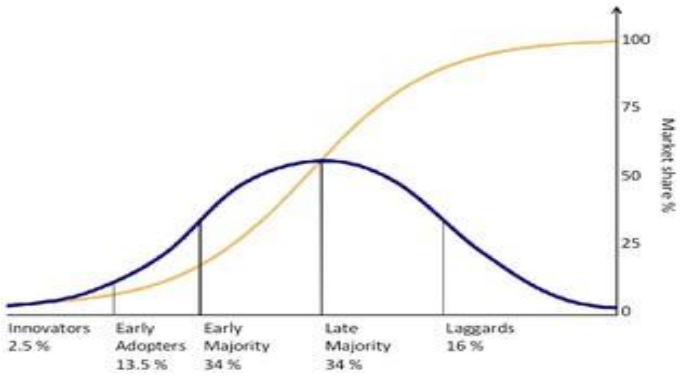
• In technology transfer programme, it is of great practical utility for the extension workers to identify the individuals who are likely to adopt innovations early and who may lag behind

• The adoption of an innovation over time follows a normal bell-shaped curve when plotted over time on frequency basis.

• If the cumulative number of adopters is plotted, it results in an ‘S’-shaped curve.

• The S-shaped curve rises slowly at first when there are few adopters in a time period,

• It then accelerates to a maximum when about half of the individuals in the system have adopted andhen it increases at a gradually slower rate as the few remaining individuals finally adopt (Fig).



- Both of these curves are for the same data, i.e. the adoption of an innovation over time by the members of a social system.
- But the bell-shaped curve shows these data in terms of the number of individuals adopting each year,
- Whereas the S-shaped curve shows these data on cumulative basis.
- The distribution of adopters over time closely approaches normality and may be explained by the statistical concept of normal curve.
- The distribution of the adopters may be partitioned (classified) into five adopter categories by using the mean (x) and standard deviation.

The five-adopter categories are conceptualized as ideal types and are presented in Figure .

1. **Innovators (Venturesome-2.50%).**

- They are also called as venturesome
- They are the first people to adopt a new idea, much ahead of other members in the community.
- They are generally very few in number.
- They may deviate from the social norms and may be viewed as deviants by others.
- They are eager to try new ideas.
- They are the persons who test the untried ideas
- Have larger farms, well educated, young in age
- They often bypass the local extension worker in getting information from the originating sources and may learn about new things even before he does.
- They subscribe to many farm magazines and specialized publications

2. Early adopters (Respectable- 13.50%)

- They are also called as respectable
- Early adopters have more opinion leadership and potential adopters look to Early adopters for advice and information about the innovation.
- The Early adopter is considered by many as **"the man to check with"** before using the new idea.
- They try to maintain adoption leadership to keep up their prestige in the community.
- They are not the persons who test the untried ideas but they are quickest to use tried ideas in own situations

Characteristics of Early adopters

1. Younger
2. They are not the persons who test the untried ideas but they are quickest to use tried ideas in their own situations
3. Have large farms.
4. Higher education than those who adopt more slowly.
5. High income
6. They participate more in the formal activities of the community.
7. They also participate more in government programmes.

3. Early majority (Deliberate): 34.00%

- They adopt new ideas just before the average members of the community.
- They are neither very early nor relatively late to adopt an innovation.
- They deliberate (careful) and take longer time to make the decision to adopt, in comparison to the innovators and early adopters. "Be not the first by which new idea is tried, nor the last to lay(leave) the old aside".
- They follow with deliberate willingness in adopting innovations but seldom(rarely) lead.
- Seldom hold position of opinion leadership
- Early majority are one of the most numerous adopter categories, making up one third of all members of a system.

4. Late majority (Skeptical): 34.00%

- They are skeptical (cautious) and more localite
- Adopt new ideas just after the average members of the social system.
- They adopt mainly because other people have already adopted the innovation.
- They do not adopt until most others adopt in their social system
- They need some persuasion & presser of peer is necessary to motivate adoption

- Late majority are one of the most numerous adopter categories, making up one third of all members of a system.
- They have less education and are older than the early majority.

5. Laggards (Traditional)– 16%

- "Laggards" are the last to adopt new practices and are most traditional or localite.
- By the time the laggards finally adopt an innovation, it may already have been superseded by a more recent idea which the innovators are already using.
- These individuals interact primarily with others who have traditional values.
- Participate least in formal organisations, cooperatives and government programmes.
- Least education, old.
- They tend to be **suspicious of innovations, innovators & change agents**

Lecture-6

Homestead technology: concept and its relevance to innovation – decision process different channels of communication and their characteristics.

Technology can be defined as the entities, both material and immaterial, created by the application of mental and physical effort in order to achieve some value. Technology refers to tools and machines that may be used to solve real-world problems. According to Kumar et. al (1999) technology consists of two primary components:

1) A physical component which comprises of items such as products, tooling, equipments, blueprints, techniques, and processes; and

2) The informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor and functional areas.

Homestead Technology

It is a complex blend of scientific information, materials, technical methods and processes that require the art of systematically using them for improving skill and performance. The household technologies usually have two important components, namely the hardware aspectthat consists of tools or materials as physical objects like peeler, pressure cooker, grain storage bin etc. And the software aspect that consists of information base for the hardware aspect regarding its use, availability cost, maintenance etc. both these aspects play.

Complementary roles in transferring homestead technologies to rural women.

Concept – The role of science and technology in accelerating the process of socio-economic development is now accepted as a keymover by policy makers, social workers and practitioners of technology however, fruits of technological development are slowly reaching out at household level particularly rural households. There is a need to improve the accessibility of appropriate technology to women to facilitate their working conditions.

Home Science is a field of knowledge and service primarily concerned with strengthening family life and enhancing potentials of the individual for meaningful life. Home science technology means a suitable technology to assist the home makers in performing jobs in the house in an efficient and effective manner. A number of technologies have been developed by the home scientists and recommended for use by rural women. Researches in Home Sciences have been conducted with a goal to discover the changing needs of individuals and families and to provide suitable solutions to satisfy the needs and to improve the quality of life of urban and rural families.

Women access to appropriate technologies

The word appropriateness is an adjective which means suitable or proper. Appropriate technology to be understood therefore, refers to technology that may be suitable or proper in context to a particular community, area, region or country. According to Rao (1989) appropriate technology has three dimensions, that is, economic, environmental and social. Hence appropriate technology must contribute the most to the economic, social and environmental objectives of development, having developmental goals, the resource endowment and the conditions of application.

The role of science and technology in accelerating the process of socio-economic development is now accepted as key mover by policy makers, social workers and practitioners of technology however, fruits of technological development are slowly reaching out at house hold level particularly rural households. There is a need to improve the accessibility of appropriate technology to women to facilitate their working conditions. But there are several constraints that operate in transferring these technologies and these have been listed as under:

Women perform multifarious tasks

Women face drudgery at work

Different homestead technologies with reference to home science

- **Knitting Machines -** machines created knitted fabrics in large swaths of material, instead of long strips, that are then looped and sewn together.
- **Knife** – it is used to cut the vegetables.
- **Peeler** – it is used in the peeling of vegetables peeler isespecially used in potatoes.
- **For Food Preparation**
  - barbecue, bread maker, blender, faucet, food processor, microwave open for heating the food, mixer for grinding the food stuffs.
- **For Food Storage** – can, canning and refrigerator is used.
- **Biogas** – energy release from biogas allow it to be used as afuel and it can be used for any heating purpose such as cooking.
- **Solar Cooker**– it is a device that is used to cook food byutilizing the energy radiated by the sun.

- **Water Filter** – it removes chlorine and bacterialcontaminants to provide better tasting and better smelling drinking water.
- **Other Water Purification Technology**– double cloth filter, chlorination pot for wells, use of alum moringa seeds, taps fitted pots.
- **Washing Machines** – it is the machine used to was thevarious types of clothes without applying any physical efforts.
- **Iron** – it is used to press the wrinkles out of and creases into clothes
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Lecture-7

Social change: concept, theories, dimensions and factors. Change agents and opinion leader; change proneness – acceptance and resistance to social change.

Concept of Social Change

Social change refers to significant alterations over time in behavior patterns, cultural values and norms, and social structures. It can occur at various levels of society and can be driven by various factors, including economic, political, cultural, and technological influences.

Theories of Social Change

1. **Evolutionary Theory**: Proposes that societies progress through stages of development from simple to complex forms, much like biological organisms.
    - **Herbert Spencer**: Compared society to a living organism.
    - **Lewis Henry Morgan**: Outlined stages of societal evolution (savagery, barbarism, and civilization).
2. **Functionalist Theory**: Focuses on how societies maintain stability and order. Change is seen as a gradual process necessary to maintain equilibrium.
    - **Talcott Parsons**: Introduced the concept of "social systems" that adapt and integrate changes.
3. **Conflict Theory**: Views social change as a result of conflicts between different social classes or groups.
    - **Karl Marx**: Emphasized the role of class struggle in societal change.
4. **Cyclical Theory**: Suggests that societies go through cycles of growth, peak, decline, and renewal.
    - **Oswald Spengler**: Proposed that civilizations have life cycles.
    - **Pitirim Sorokin**: Introduced the concept of cultural dynamics.
5. **Modernization Theory**: Focuses on how traditional societies transform into modern ones, often emphasizing the adoption of Western values and practices.
    - **Walt Rostow**: Outlined stages of economic growth leading to modernization.
6. **Dependency Theory**: Argues that global inequalities are a result of historical exploitation of poorer nations by wealthier ones.

- **Andre Gunder Frank**: Highlighted the exploitation and dependency of peripheral nations on core nations.

Dimensions of Social Change

1. **Cultural Change**: Alterations in beliefs, values, norms, and symbols in a society.
2. **Structural Change**: Changes in the social institutions and relationships.
3. **Functional Change**: Changes in the roles and functions of institutions and social groups.
4. **Technological Change**: Innovations and advancements in technology impacting social practices.
5. **Economic Change**: Shifts in economic practices, structures, and policies.

Factors of Social Change

1. **Technological Innovations**: New technologies can drastically alter social practices and structures (e.g., the internet, industrialization).
2. **Economic Factors**: Economic growth, recession, and policies can lead to social changes.
3. **Political Factors**: Changes in political leadership, policies, and ideologies can drive social change.
4. **Cultural Factors**: Shifts in cultural values and norms, often influenced by globalization, can lead to changes.
5. **Environmental Factors**: Natural disasters, climate change, and resource availability can impact social structures.
6. **Demographic Factors**: Changes in population size, age distribution, and migration patterns.
7. **Social Movements**: Organized efforts by groups to create or resist social change (e.g., civil rights movements).

Change Agents and Opinion Leaders

- **Change Agents**: Individuals or groups that actively promote and facilitate change within a society. They can be innovators, reformers, or leaders who work to implement new ideas and practices.

- **Opinion Leaders**: Influential members of a community who can sway the attitudes and behaviors of others. They often play a crucial role in the diffusion of innovations and ideas.

Change Proneness – Acceptance and Resistance to Social Change

- **Acceptance**: Factors influencing acceptance include perceived benefits, compatibility with existing values, and social support.
- **Resistance**: Resistance can arise from fear of the unknown, perceived threats to established norms, and vested interests in maintaining the status quo. Resistance can be addressed through education, dialogue, and involving stakeholders in the change process.

Lecture-8

Different homestead technologies with special reference to Home Science.

Homestead Technologies with Special Reference to Home Science

Homestead technologies refer to innovations and practices that enhance the efficiency, productivity, and sustainability of a homestead. In the context of Home Science, these technologies often focus on improving household management, nutrition, health, and overall well-being. Here are some key homestead technologies with a special focus on Home Science:

1. Kitchen Garden Technologies

- **Vertical Gardening**: Growing plants vertically using walls or stacked layers, ideal for small spaces.
- **Hydroponics**: Growing plants without soil, using nutrient-rich water solutions.
- **Aquaponics**: Combining aquaculture (raising fish) with hydroponics, creating a symbiotic environment.

2. Food Preservation and Storage

- **Solar Dryers**: Using solar energy to dehydrate fruits, vegetables, and herbs, preserving them for longer periods.
- **Vacuum Sealing**: Removing air from packaging to extend the shelf life of food items.
- **Fermentation**: Using natural fermentation processes to preserve foods, enhance flavors, and improve nutritional value (e.g., making yogurt, sauerkraut).

3. Energy-Efficient Appliances

- **Solar Cookers**: Utilizing solar energy to cook food, reducing reliance on conventional fuels.
- **Energy-Efficient Stoves**: Stoves designed to use less fuel and produce less smoke, improving indoor air quality.
- **LED Lighting**: Energy-efficient lighting options that consume less power and have a longer lifespan.

4. Water Management and Conservation

- **Rainwater Harvesting**: Collecting and storing rainwater for household use, reducing dependence on municipal water supplies.
- **Greywater Systems**: Recycling water from sinks, showers, and laundry for irrigation and other non-potable uses.
- **Drip Irrigation**: Efficient irrigation systems that deliver water directly to the roots of plants, minimizing wastage.

5. Waste Management and Recycling

- **Composting**: Converting organic household waste into nutrient-rich compost for gardening.
- **Biogas Production**: Generating biogas from organic waste, which can be used for cooking and heating.
- **Upcycling and Reuse**: Creative reuse of household items to reduce waste and create functional or decorative items.

6. Home-Based Health Technologies

- **Herbal Gardens**: Growing medicinal plants for home remedies and health maintenance.
- **Natural Cleaning Products**: Using homemade or eco-friendly cleaning agents to reduce exposure to harmful chemicals.
- **Water Purification Systems**: Simple, cost-effective methods for ensuring safe drinking water, such as solar disinfection or ceramic filters.

7. Nutrition and Food Security

- **Home-Based Food Fortification**: Enhancing the nutritional value of home-cooked meals through techniques like sprouting, fermentation, and fortifying with micronutrients.
- **Integrated Farming Systems**: Combining crop cultivation, livestock rearing, and agroforestry to create a sustainable and diversified food system.

8. Textile and Clothing Technologies

- **Natural Dyeing**: Using plant-based dyes to color fabrics, reducing the environmental impact of synthetic dyes.
- **Sustainable Fashion**: Emphasizing the use of eco-friendly materials and practices in clothing production and maintenance.

9. Educational and Information Technologies

- **E-Learning Platforms**: Utilizing online resources and platforms for continuous learning and skill development in areas like nutrition, health, and home management.
- **Mobile Apps for Home Management**: Applications that help in budgeting, meal planning, and household organization.

These homestead technologies are integral to Home Science as they aim to improve the quality of life by promoting sustainable practices, enhancing health and nutrition, and optimizing household management. Adopting these technologies can lead to more self-sufficient and resilient households.