Adoption and diffusion of innovations, adoption and diffusion process, adopter categories and barriers in diffusion of fisheries innovations

Innovation:

An innovation is an idea, practice or objective that is perceived as new by an individual or other unit of adoption. It may be new variety/ breed of fish, new chemicals or medicines, new techniques of doing things etc. Sometimes farmers also develop new practice which is also consider as an innovation.

Adoption:

Adoption is the decision-making process to make full use of an innovation as the best course of action available.

Diffusion:

It is the process by which an innovation is communicated through certain channels overtime among the members of a social system. It is special type of communication, in which the messages are concerned with new ideas (Rogers, 1962).

The Crucial element in the diffusion of innovation are **(i)** the new idea, **(ii)** which is communicated via certain channels **(iii)** among the members of a social system **(iv)** overtime.

Adoption and Diffusion process:

Rogers (1962) defined the adoption process as the mental process through which an individual passes from first hearing about an innovation to final adoption.

Adoption process vs diffusion process:

The adoption process should be separated from the diffusion process which is the spread of new idea from its source of invention or creation to its ultimate users. A major difference between the diffusion process and the adoption process is that diffusion occurs among persons while adoption is an individual matter.

Ryan and Gross (1943), were probably the first to recognise that the adoption of new idea consisted of stages.

The North Central Rural Sociology subcommittee for the study of diffusion of farm practices (1955), identify the five stages of the adoption process, which received worldwide attention. According to them adoption is not an instantaneous act. It is a process that occurs over a period of time and consists of a series of actions. These are:

1. **Awareness stage:**

The individual learns of the existence of the new idea but lacks information about it. At this stage an individual is aware of the idea, but lacks detailed information about it. For instance, the people may know only the name and may not know what the idea is, what it will do or how it will work.

2. **Interest stage:**

The individual develops interest in the innovation and seeks additional information about it. At this stage the individual develops interest in the idea and tries to acquire more information about it. The person wants to know what it is, how it works and what are its potentialities.

3. **Evaluation stage:**

The individual makes mental application of the new idea to the present and anticipated future situation and decides whether or not to try it. At this stage the individual judges the worth of the innovation. The person makes an assessment whether the idea is applicable to their own situation, and if applied, what would be the result.

4. **Trial stage:**

The individual actually applies the new idea on a small scale in order to determine its utility in own situation. If, in the judgement of the individual, 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. These are generally small scale trials to test the effectiveness of the innovation in one's own situation.

5. **Adoption stage:**

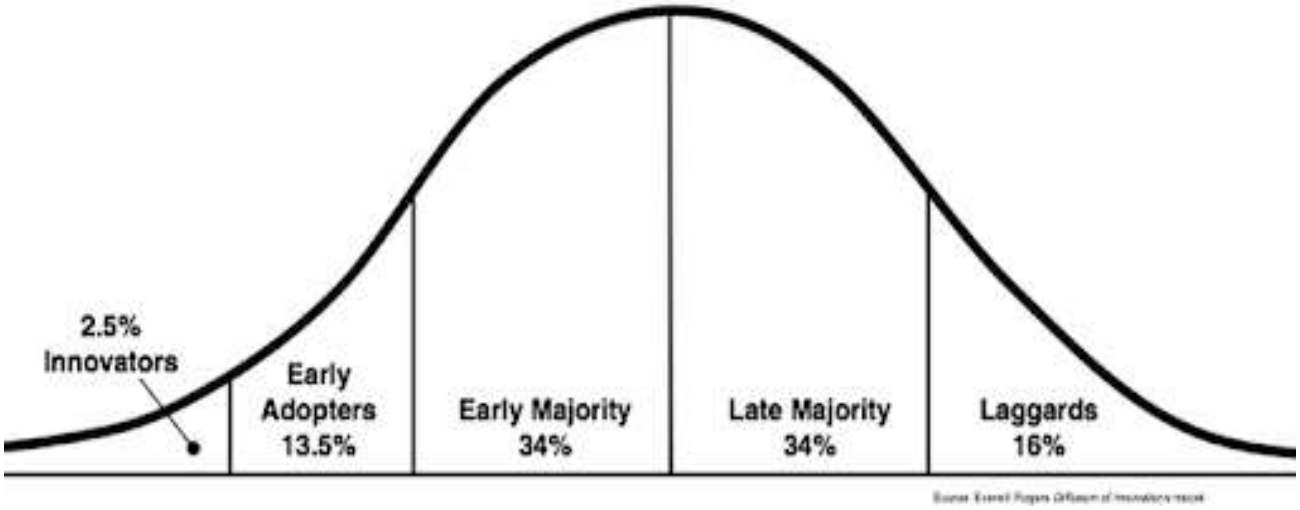
The individual uses the new idea continuously on a full scale. Trial may be considered as the practical evaluation of an innovation. It provides evidence of the advantages of the innovation. Being satisfied with the trial and considering the pros and cons of the situation, the individual takes a final decision and applies the innovation in a scale appropriate to own situation on a continued basis.

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.

Adopters categories:

All individuals in a social system do not adopt an innovation at the same time. Rather they adopt in an ordered time sequence, and they may be classified into adopter categories on the basis of when they first begin using a new idea. In technology transfer programme, it is of great practical utility for the extension agents 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 a 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, accelerates to a maximum when about half of the individuals in the system have adopted, and then increases at a gradually slower rate as the few remaining individuals finally adopt.



1. **Innovators**

They are **venturesome** and first 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 norm and may be viewed as deviants by others.

They are **cosmopolite** and their sphere of influence and activity may go beyond the community boundaries. They are mentally alert, have good contact with cosmopolite sources of information and actively seek new ideas. They are oriented to take risk, have large size enterprise and have the financial resource to absorb any possible loss due to adoption of the innovation. They are generally literate and have more prestige in the community. The innovators are oriented to develop good contact with the research station and high level extension functionaries.

2. **Early adopters**

They are **localite** and are a more integrated part of the community. Because early adopters are not too far ahead, the average members of the community can comprehend their activities relating to adoption of the innovation. They have more opinion leadership and potential adopters look to them for advice and information about the innovation. They try to maintain adoption leadership to keep up their prestige in the community. Early adopters are literate, have large size enterprise, high income, more participative and maintain good contact with cosmopolite sources of information. They do not test untried ideas, but quickest to use tried ideas in their own situations.

3. **Early majority**

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 are deliberate and take longer time to make the decision to adopt, in comparison to the innovators and early adopters. They do not hold leadership position in adoption, but actively participate in extension programmes like training, demonstration, farmers' day, study tour etc. They are slightly above average in education, social and economic status, and experience about the enterprise. Because of their limited resources, they cannot take hasty or poor decisions.

They have less contact with the cosmopolite sources of information. They are active localites and associate mainly with the people of their own community. They are the neighbours and friends from whom majority of the members of the community seek information about innovations

4. **Late majority**

They are **cautious and skeptical** and adopt new ideas just after the average members of the community. They adopt mainly because people have already adopted the innovation and getting the benefit out of it. They have low level of education, low level of participation and depend mostly on localite sources of information.

5. **Laggards**

They are **traditional** and the last to adopt an innovation. 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.** They are most localite and primarily interact with those who have traditional values. A fast-moving world is shocking to them and they find it difficult to adjust with it. They do not have opinion leadership and is almost a forgotten mass of people in the community. They have little or no education, least participant and hardly any contact with the outside world. These people are likely to belong to the backward classes, may be working as share-croppers and 'agricultural labourers, with very little land of their own. They are generally resource-poor people with little surplus to invest in their production enterprise. They generally live in areas having least urban influence and socially and economically the most disadvantaged.

Composite Picture of Adopter Categories

Adopter category	Salient values	Personal traits	Communication behaviour	Social relationship
Innovators	"Venture some"; willing to accept risk	Youngest age; highest social status; largest and most specialized operations; wealthy	Closest contact with scientific information source; interaction with other innovators, relatively greatest use of impersonal sources	Some option leadership; very cosmopolite

Early adopters	"Respect"; regarded by many others in the social system as a role-model	High social status, large and specialized operations	Greatest contact with change agents and early adopters	Greatest opinion leaders of any category in most social system; very localite
Early majority	"Deliberate"; willing to consider innovation only after peers have adopted	About average social status; average sized operation	Considerable contact with change agents and early adopters	Some opinion leadership
Late majority	"Skeptical"; overwhelming pressure from peers needed before adoption occurs	Below average social status, small operation; little specialization; small income	Secure ideas from peers who are mainly late majority or early majority; less use of mass media	Little opinion leadership
Laggards	"Tradition"; oriented to the past	Little specialization, lowest social status; smallest operation; lowest income; oldest	Neighbours, friends and relatives with similar values are main information source	Very little opinion leadership; semi-isolate

Barriers in Diffusion of Fisheries Innovations:

There are certain factors that negatively affect diffusion of innovation and subsequently the adoption process. These barriers have been dealt with extensively and incorporated even in models on innovation resistance. They could range at the micro level from product characteristics, to the more macro, socio-cultural, economic, situational and technological forces. While innovation characteristics like relative advantage, compatibility, trialability, and observability, do boost the rate of diffusion and adoption, perceived complexity in purchase and usage of innovative offerings, retard the process. Innovations could also meet resistance from socio-cultural, economic, situational and technological forces. The innovative offering may not compatible with social norms, values and lifestyle; or may not go well with the economic strata; or be technologically complex, leading to fear to usage, obsolescence

and risk. The basic barriers to the diffusion process and subsequent adoption are as usage, value, risk and psychological factors.

Usage:

"Usage" as a barrier to innovation diffusion and adoption is said to exist when the social system (the target market) finds it incompatible to the existing usage and consumption behaviors and thus, finds it difficult to accept and use (**example**: if a fish farmer cultures such a fish variety which has high growth rate and less chance of occurrence of disease but no demand in the market, so there will be no use of that fish variety); in other words, they find it to be incompatible with their existing behaviors.

Value:

Fish farmers could also resist acceptance of an innovation, as they may feel low about the perceived value; consumers may perceive the new product/service offering to be the same as existing offerings, and "nothing new" or "better in value." **For example**, if a new culture practice or fish feed offers nothing in terms of fish production so farmers will not accept change.

Risk:

Risk also acts as a barrier to diffusion of innovation. Farmers show reluctance to use an innovative product/service offering out of fear of taking risks. There could be **six types of risks** that a fish farmer could face, viz., **functional risk (would the product perform as expected), physical risk (would the product usage and or consumption pose a threat), social risk (would it cause risk of social embarrassment), financial risk (would the product will be worth the cost), and time risk (would it lead to wastage of time spent).** The perceived risk barrier acts as a big barrier to the diffusion and adoption process.

Psychological factors:

Psychological factors also prevent a consumer from adopting a new product/service offering. These factors relate to a person's background, attitude and belief, perception, values, lifestyles, culture etc. They may find the innovation to be psychologically threatening. The two common threats are i) tradition barrier, and ii) image barrier.

Tradition barrier relates to socio-culturally accepted norms of behaviour that are regarded as "right and appropriate," by the consumer segment. Anything that is new and does not support traditional patterns is regarded as psychologically threatening; this includes usage and adoption of innovative products and services. **For example**: Fish culture along with piggery could be a profitable business, but in many religions pig is considered as dirty animal and if a person indulges himself in

pig culture so the society of that religion may cast out that person, so traditional barrier also act as one of the barrier for adopting innovations.

Image barrier refers to the farmers/consumer's attitude and feelings about the product/service offering, the brand, or the dealer, or even the country of origin. It also relates to personality and self image (actual and ideal). Consumers' may resist adoption of new products/services if they are patriotic and ethnocentric; or if they do not regard the innovation or the marketer/dealer to be of their "class" in terms of socio-economic status or even quality.