

Model Answer

AS-2275

M.Sc. (First Semester) Examination, 2013

Rural Technology

Paper: RT- 703 (Transfer and Management of Technology Innovation)

**Answer 1.**

- (i) (d) Implementation
- (ii) (d) All of these
- (iii) (b) Early adopters
- (iv) (d) 34%
- (v) (c) 2.5%
- (vi) (d) All of these

Answer 2.

- (i) True
- (ii) True
- (iii) False
- (iv) True

Answer 3.

Answer (i): Evaluation stage of adoption

The individual mentally examines the innovation using the information gathered, trying to determine whether it will really impact, their work and how it will make their effort easier or better. This is a critical stage and the first one where the voices of the community (i.e. co-workers, friends or neighbors) are often the largest influence on an individual, rather than outside contacts.

Answer (ii).

Innovation: "Innovation is an idea, practices or object that is perceived as new by an individual or other unit of adoption." There are several importance of innovations in day to day life of human. In innovation is an important in our economics, business, entrepreneurship, design, technology, sociology, and engineering. In society, technological innovation aids in comfort, convenience, and efficiency in every day life. These innovations included wood to steel cars, iron to steel rails, stove-heated to steam-heated cars, gas lighting to electric lighting, diesel-powered to electric-diesel locomotives. By the mid-20th century, trains were making longer, faster, and more comfortable trips at lower costs for passengers. Other areas that add to everyday quality of life include: the innovations to the light bulb from in candescent to compact fluorescent then LED technologies which offer greater

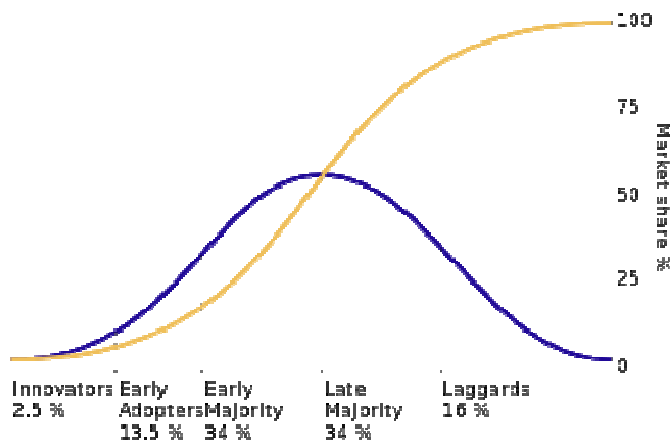
efficiency, durability and brightness; adoption of modems to cellular phones, paving the way to smart phones which supply the public with internet access any time or place; cathode-ray tube to flat-screen LCD televisions and others. Innovation is the development of new value through solutions that meet new needs, or adding value to old customers by providing new ways of maximizing their current level of productivity. It is the catalyst to growth.

Answer (iii).

Characteristics of Late Majority :Individuals in this category will adopt an innovation after the average member of the society. These individuals approach an innovation with a high degree of skepticism and after the majority of society has adopted the innovation. Late Majority are typically skeptical about an innovation, have below average social status, very little financial liquidity, in contact with others in late majority and early majority, very little opinion leadership.

Answer (iv)

Rogers defines an adopter category as a classification of individuals within a social system on the basis of innovativeness. Rogers suggests a total of five categories of adopters in order to standardize the usage of adopter categories in diffusion research. The adoption of an innovation follows an S curve when plotted over a length of time. The categories of adopters are: innovators, early adopters, early majority, late majority, and laggards.



Adopter category: 1. Innovators : Innovators are the first individuals to adopt an innovation. Innovators are willing to take risks, youngest in age, have the highest social class, have great financial liquidity, are very social and have closest contact to scientific sources and interaction with other innovators. Risk tolerance has them adopting technologies which may ultimately fail. Financial resources help absorb these failures.

2. Early adopters : This is the second fastest category of individuals who adopt an innovation. Early adopters are typically younger in age, have a higher social status, have more financial liquidity, advanced education, and are more socially forward than late adopters. More discrete in adoption choices than innovators.

3. Early Majority: Individuals in this category adopt an innovation after a varying degree of time. This time of adoption is significantly longer than the innovators and early adopters.

4. Late Majority: Individuals in this category will adopt an innovation after the average member of the society. Late Majority are typically skeptical about an innovation, have below average social status, very little financial liquidity, in contact with others in late majority and early majority, very little opinion leadership.

5. Laggards: Individuals in this category are the last to adopt an innovation. Unlike some of the previous categories, individuals in this category show little to no opinion leadership.

Answer (v): Some times the technology is itself Barriers in the transfer of technology because

- It has no relative advantages
- It has no compatibility
- It is more complex to use
- It dose not trial previously
- It doesn't have observability
- It doesn't have predictability
- It has high cost, etc.

Answer (vi)

Process of technology diffusion: Diffusion of an innovation is usually considered to occur through a five step process. The five stages (steps) in the adoption process are: knowledge, persuasion, decision, implementation and confirmation. This process is a type of decision-making. It occurs through a series of communication channels over a period of time among the members of a similar social system. Ryan and Gross first indicated the identification of adoption as a process in 1943. Rogers five stages (steps): awareness, interest, evaluation, trial, and adoption are integral to this theory. An individual might reject an innovation at any time during or after the adoption process. Diffusion of Innovations Rogers changes the terminology of the five stages to: knowledge, persuasion, decision, implementation, and confirmation. However the descriptions of the categories have remained similar throughout the editions.

Five stages of diffusion process :

1. Knowledge : In this stage the individual is first exposed to an innovation but lacks information about the innovation. During this stage of the process the individual has not been inspired to find more information about the innovation.

2. Persuasion : In this stage the individual is interested in the innovation and actively seeks information/detail about the innovation.
3. Decision: In this stage the individual takes the concept of the change and weighs the advantages/disadvantages of using the innovation and decides whether to adopt or reject the innovation. Due to the individualistic nature of this stage Rogers notes that it is the most difficult stage to acquire empirical evidence.
4. Implementation : In this stage the individual employs the innovation to a varying degree depending on the situation. During this stage the individual determines the usefulness of the innovation and may search for further information about it.
5. Confirmation : In this stage the individual finalizes his/her decision to continue using the innovation. This stage is both intrapersonal (may cause cognitive dissonance) and interpersonal, confirmation the group has made the right decision.

Question 4.

Answer (i): Sources of information in different stages of adoption:

The adoption behaviour individual is dependent upon various multitude of interrelated personal, cultural, social and situational factors.

Stages of adoption process				
Awareness (learns about a new ideas)	Interest (Get more information)	Evaluation (Tries out mentally)	Trail (Tries it little)	Adoption (Accepts it full scale & continuous use)
Mass media – Radio, TV, Newspaper, Magazine, Friends and neighbours, Dealers and salesmen etc.	Mass media – Radio, TV, Newspaper, Magazine, Friends and neighbours, Dealers and salesmen	Friends and neighbours, agency , Dealers and salesmen	Friends and neighbours, salesmen	Friends and neighbours

Answer (ii) Bar Zakoy Model : : Bar-Zakay (1971) developed a rather comprehensive TT model based on a project management approach. He divided the TT process into the Search, Adaptation, Implementation, and Maintenance stages. He depicted the activities, milestones, and decision points (go or no-go) in each of these stages. The upper half of the figure delineates the activities and requirements of the transferor (referred to as the “donor” by Bar-Zakay) and the lower half that of the transferee or the “recipient.” The activities to be carried out are specified in detail in this model and the importance of both the transferor and transferee acquiring skills to undertake technological forecasting, long-range planning, and gathering of project-related intelligence is emphasised. The model uses the term “donor” for the transferor giving the impression that the owner of technology is giving away a valuable asset out of altruistic reasons.

The Bar-Zakay model also suffers from another disadvantage, that, “The model has limited relevance today since many of the activities, terms, and ideas expressed reflected the setting of the late 1960s to early 1970s, when buyers of technology were mainly passive recipients who depended greatly on aid programs for the purchase of technology. It was also an era when government controls were instrumental in determining the rate, direction, and scope of technology flows.” The lessons that can be learnt from the Bar-Zakay model are the following:

- There is a need for a comprehensive examination of the entire TT process from “search” right through to “post-implementation” activities.
- A process approach must be adopted in planning and implementing TT projects
- It is important to have milestones and decision points so that activities can be strengthened, mistakes corrected, or even the project terminated at any point in time.

Answer (iii): Innovation play an important role in changing human need:

Innovation is the application of better solutions that meet new requirements, in articulated needs, or existing market needs. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments and society. The term innovation can be defined as something original and, as consequence, new that "breaks in to" the market or into society. One usually associates to new phenomena that are important in some way. A definition of the term, in line with these aspects, would be the following: "An innovation is something original, new, and important - in whatever field - that breaks in to (or obtains a foothold in) a market or society."

While something novel is often described as an innovation, in economics, management science and other fields of practice and analysis it is generally considered a *process* that brings together various novel ideas in a way that they have an impact on society.

In society, technological innovation aids in comfort, convenience, and efficiency in everyday life *cite*. These innovations included wood to steel cars, iron to steel rails, stove-heated to steam-heated cars, gas lighting to electric lighting, diesel-powered to electric-diesel locomotives. By the mid-20th century, trains were making longer, faster, and more comfortable trips at lower costs for passengers. Other areas that add to everyday quality of life include: the innovations to the light bulb from incandescent to compact fluorescent then LED technologies which offer greater efficiency, durability and brightness; adoption of modems to cellular phones, paving the way to smartphones which supply the public with internet access any time or place; cathode-ray tube to flat-screen LCD televisions and others.

In business and economics, innovation is the catalyst to growth. With rapid advancements in transportation and communications over the past few decades, the old world concepts of factor endowments and comparative advantage which focused on an area's unique inputs are outmoded for today's global economy. In addition, entrepreneurs continuously look for better ways to satisfy their consumer base with improved quality, durability, service, and price which come to fruition in innovation with advanced technologies and organizational strategies.

In the organizational context, innovation may be linked to positive changes in efficiency, productivity, quality, competitiveness, market share, and others. However, recent research findings highlight the complementary role of organizational culture in enabling organizations to translate innovative activity into tangible performance improvements. All organizations can innovate, including for example hospitals, universities, and local governments.

In addition, the growing use of mobile data terminals in vehicles that serves as communication hubs between vehicles and control center automatically send data on location, passenger counts, engine performance, mileage and other information. This tool helps to deliver and manage transportation systems.

Answer (iv): Definition of communication:

According to Van Den Ban (1988) "Communication is a process by which messages are transferred from a source to receiver."

According to J.P. Leagans (1961) "communication is a process by which two or more people exchange ideas, facts, feeling or impression in a way that each gain a common understanding of the meaning intent and use of message".

Effect of communication channels in human life

Communication is an essential part of life. The ability to communicate clearly and effectively is one of the skills that businesses look for in employees. The use of technology can be a great help to people in communicating, reducing the time it takes. But technology can have consequences of reducing person-to-person interaction without the device as an intermediary.

Email: Electronic mail, or email, was one of the first changes in how companies use technology to communicate with individuals. The ability to release information to many different people at once, without calling a meeting or requiring printing of the materials, turned into a money- and time-saving device. The positives of email were the speed of delivery and the reduction of paper costs.

Negatively, more people spend more time on email than on other projects. The sound of a new email being received and the tendency to check email frequently have led to distracted workers. A poorly written email can lead to confusion, rather than clarity, in the workplace.

Text Messaging: Text messaging is one of the most popular ways to communicate. Rather than seeing or talking to a person face-to-face, you can talk to a person over the phone at your leisure. It can be an effective tool for locating a person in a crowd or talking to someone far away. Text messaging also has its own language, an abbreviated form of speech that has found its way into classrooms and businesses.

Instant Messaging: Instant messaging, or IM, has allowed people to reach other people without having to use the phone. The ability to have questions answered immediately allows customer support staff to work faster without irritating the customer.

Social Media: Social media have been a revolution in how people plan events and communicate with one another. Rather than talking to their friends in person, they can post a comment about their life. The revolution of social media has allowed people to rekindle friendships, make new friends and gain new interests. Some people will use social media to connect new relationships in person, while other people will never meet anyone from the sites used.