UNIT 10: DIFFUSION OF INNOVATION

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10.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- state the meaning diffusion and innovation
- describe the classification of innovations
- interpretelements of diffusion process
- enumerate the Diffusion and Innovation Theory
- explain the factors affecting diffusion of innovation
- discuss the various barriers of diffusion of innovation
- discuss the adoption and diffusion processes
- enumerate the relationship between culture and diffusion and communication and diffusion.

10.2 INTRODUCTION

Innovation can happen anywhere, whether it is a profit-driven or non-profit organization. It can affect the performance of the organization itself, i.e. the product or service, but also the structures of how the service is provided. Facing with a dynamically changing environment, marketers are always with regard to new product development. This could result in modification ranging from slight to moderate to large or the continuum, or even result in totally new product and service offerings. However, there will be two questions that faces by a marketer that whether the new product and service offering would be accepted and how quickly accepted by the segment would. While the first pertains to what is referred to as diffusion, the second pertains to what is known as adoption. This unit discusses about all aspects of diffusion of innovation.

10.3 MEANING OF DIFFUSION

E.M. Rogers, a professor of rural sociology, popularized the theory of 'Diffusion and Innovation' in his book Diffusion of Innovations published in 1962. Rogers argues that diffusion is the process by which an innovation is communicated over time among the participants in a social system. Rogers proposes that four main elements influence the spread of a new idea: the innovation itself, communication channels, time and a social system. This process relies heavily on human capital. The innovation must be widely adopted in order to self-sustain. Within the rate of adoption, there is a point at which an innovation reaches critical mass.

Two issues are dealt with within the purview of 'Diffusion of Innovation'.'Diffusion' is regarded as a macro process that deals with the spread of a new product or service offering amongst the potential market; it relates to the acceptance/rejection of an innovation by the segment(s). 'Adoption', on the other hand is a micro concept that lays emphasis on the various phases or stages through an individual consumer passes while accepting/rejecting a new product or service offering.

Diffusion is the process by which a new idea or new product is accepted by the market. Diffusion is a measure of the rate of adoption of a new innovation.The rate of diffusion is the speed with which the new idea spreads from one consumer to the next. Diffusion is the process by which innovations (new products, new processes or new management methods) spread within and across economies. It is the manner in which an innovative technology spreads across a market group by group according to the readiness of each group to adopt it.

10.4 INNOVATION

In a highly competitive environment, where number of players exist and compete for a share of the market, the introduction of new product and service offerings becomes crucial for existence and long term survival; thus, marketers are always on the move towards introduction of new product and service offerings that would help meet the evolving needs and wants of the consumer segment(s). The products that are offered may be slightly different from the existing alternatives, some may be highly different, and some totally new. They all fall under the purview of what is referred to as an 'innovation', and the product and services, referred to as 'innovative products and services'. Wherever they fall on a range, they illustrate a change in one of few or all of the 4Ps -product form, price, place and promotion. Whatever are the changes that a marketer offers, it is the changing needs and desires amongst the consumers that the former attempts to address; and, so it is important for him to understand how the segment(s) would react to such a product and service offering.

The term 'innovation' has been described with varying perspectives and orientations, viz., firm-oriented, product-oriented, market-oriented, and consumer-oriented. Let us discuss each one of these:

- **Firm-oriented:** As per this approach, a product or service offering is regarded as 'new', if the company starts manufacturing or marketing it for the first time. In other words, the firm orientation treats the 'newness' in terms of the company's perspective.

- the product is 'innovative', if it is 'new' for the company.
- the existence of the product in the market is disregarded; as long as it is 'new' to the company, it is regarded as an innovation.

- **Product-oriented:** A product and service offering is regarded as an 'innovation', if the product changes in terms of form, attributes, features, and overall benefits; such changes have a twofold connotation, one, in terms of technology, and two, in terms of consumption usage and behavioral patterns.
  - the product is 'innovative', if it is 'new' in terms of form, attributes and features.
  - there are changes in technology, as well as impact on consumer consumption behavior.
- **Market-oriented:** The market-oriented approach views 'innovation' purely from a marketers' perspective, in the sense that a product is regarded as 'new', depending on how much exposure the consumers' have about the new product or service offering, and the total sales penetration that has occurred in the specified short period of time.
  - The product is regarded 'new' if the market does not have much exposure of it.
  - Sales penetration has been low.

  Here again, there can be two bases that underlie a market-oriented definition; viz.,
  - A product or service offering is regarded as 'new', if it has been in the market for a short period of time.
  - It is 'new', if it has been purchased/used/consumed by a small portion of the total potential market.
- **Consumer-oriented:** The consumer-oriented approach to defining 'innovation', is a favored approach over others, especially in consumer behavior research, and more specifically in research related to diffusion of innovation, and adoption; the reason is that the concept of 'newness' or 'innovation' is dealt through focus on consumer, and his/her reaction towards the new product and service offering, in terms of acceptance and rejection. As per this approach, any product is regarded as 'new', if

the consumer believes it to be so; it is purely based on the consumers' perception of the newness of the product, rather than on technological changes that the product embodies.

10.5 CLASSIFICATION OF INNOVATIONS

Based on varying perspectives and orientations, new products have been variously classified. The most commonly used classification has been proposed by Thomas S. Robertson. Based on the two dimensions, technological and behavioral, Robertson has classified the new products and innovations into three categories, viz., continuous innovations, dynamically continuous innovations, and discontinuous innovations.

- **Continuous Innovations:** A continuous innovation is one that entails modification over an existing product; it is illustrative of little technological change, but requires no behavioral change on the part of the consumer for product usage, consumption and resultant experiences.
  - The technology used to manufacture the new product is not different from the one that produced the original or already existing product; and, the consumer does not have to adopt a new purchase, usage and consumption pattern to use it.
  - Example: all line extensions, or product variants (new form, size, flavor etc.); For example, various flavors of Amul Chocolate are line extensions of the original Amul Milk Chocolate.
  - Other examples: laser printers replacing earlier versions; a change from VCDs to DVDs was illustrative of better technology, better picture quality.
- **Dynamically Continuous Innovations:** An innovation is regarded as dynamically continuous, when it includes some technological change in the product, but requires no behavioral change on the part of the consumer for product usage, consumption and resultant experiences.
  - The technological change is brought either to increase efficiency, or provide greater value to the consumer.
  - Example: the walkman giving way to the portable CD player, or the

semi-automatic washing machine giving way to the fully automatic one.

- **Discontinuous Innovations:** On a continuum, they fall as most radical; they are truly 'innovative' in the sense that they are technologically superior, and also require considerable behavioral change within consumers with respect to purchase and usage patterns.
  - The technology used to manufacture the new product is different from the one that produced the original or already existing product; and, the consumer has to adopt a new purchase, usage and consumption pattern to use it.
  - Example, the telephone giving way to the mobile phone, or the 3G and GPRS providing email access while on move as against email access on the computer/laptop.

GeneralClassifications of Innovation:

- **Product Innovation:** Products concern both material products and intangible services such as services that meet customer needs and are thus acquired by the customer. With product innovations, a company earns its money and tries to differentiate itself from the competition.
- **Service Innovation:** service innovations are like product innovations when it comes to selling them directly to the customer, e. g. insurance or management consultancy. Even if services are not actively sold, as in the case of manufacturing companies, each company still provides services to its customers, for example in logistics, complaints, sales advice, etc., even if they are not actively sold. This is also where innovation comes in when it comes to differentiation and customer enthusiasm.
- **Business Model Innovation:** The business model is the way a company functions and earns money. The business model innovation encompasses innovations in strategy, marketing, supply chains, value creation, pricing or cost structures.
- **Process and Technology Innovation:** As the name implies, these are technological innovations, such as the creation of products and services. In principle, they are also process innovations. These include,

for example, production processes or IT technologies for apps. Product innovations, quality improvements or cost savings often go hand in hand with process and technology innovations.

- **Organizational Innovation:** Organizational innovations affect the process and organizational structure. These can be organizational process innovations or management innovations, e. g. new tools for measuring customer satisfaction or optimizing delivery processes to reduce costs.
- **Social Innovation:** Social innovations are innovations where the benefit lies with society and the purpose is not primarily profit. Examples include innovation in education, poverty reduction, equal opportunities and health.
- **Environmental Innovation:** All innovations that contribute to improving the environment are environmental innovations. This concerns for example environmentally friendly products, contributions to environmental protection or the avoidance of emissions.

Remarkable Innovations Types in Practice:

- **Incremental Innovation:** Incremental innovation seeks to improve the systems that already exist, making them better, faster cheaper.
- **Process Innovation:** Process innovation means the implementation of a new or significantly improved production or delivery method.
- **Red Ocean Innovation:** Red Oceans refer to the known market space, i.e. all the industries in existence today. In red oceans, industry boundaries are defined and accepted, and the competitive rules of the game are known. Companies try to outperform their rivals to grab a greater share of existing demand usually through marginal changes in offering level and price. As the market space gets crowded, prospects for profits and growth are reduced. Products become commodities, and cutthroat competition turns the red ocean bloody.
- **Service Innovation:** Service Innovation can be defined as "a new or considerably changed service concept, client interaction channel, service delivery system or technological concept that individually, but most likely in combination, leads to one or more (re)new(ed) service functions that are new to the firm.

- **Business Model Innovation:** Business Model Innovation (BMI) refers to the creation, or reinvention, of a business itself. Whereas innovation is more typically seen in the form of a new product or service offering, a business model innovation results in an entirely different type of company that competes not only on the value proposition of its offerings, but aligns its profit formula, resources and processes to enhance that value proposition, capture new market segments and alienate competitors.
- **Sustainable Innovation:** Eco-innovation is a term used to describe products and processes that contribute to sustainable development
- **Frugal Innovation:** Frugal Innovation is about doing more with less. Entrepreneurs and innovators in emerging markets have to devise low cost strategies to either tap or circumvent institutional complexities and resource limitations to innovate, develop and deliver products and services to low income users with little purchasing power.
- **Blue Ocean Innovation:** Blue Oceans represent the unknown market space, i.e. all the industries not in existence today. Blue oceans are defined by untapped market space, demand creation, and the opportunity for highly profitable growth. In blue oceans, competition is irrelevant because the rules of the game are not set. Blue oceans can be created by expanding existing industry boundaries or by reconstructing industry boundaries.
- **Radical Innovation:** Radical innovations provide something new to the world that we live in by uprooting industry conventions and by significantly changing customer expectations in a positive way. Ultimately, they often end up replacing existing methods / technologies.
- **Open Source Innovation / CrowdSourcing:** In production and development, open source is a philosophy or pragmatic methodology that promotes free redistribution and access to an end product's design and implementation details
- **Experience Innovation:** Companies that try to create holistic experiences by emotionally engaging their consumers.
- **Disruptive Innovation:** A disruptive innovation is an innovation that helps create a new market and value network, and eventually goes on

to disrupt an existing market and value network (over a few years or decades), displacing an earlier technology.

- **User Led Innovations:** The user is king. It's a phrase that's repeated over and over again as a mantra. Companies must become user-centric. But there's a problem. It doesn't work. Here's the truth. Great brands lead users, not the other way around.
- **Supply Chain Innovation:** Supply chain innovation is about applying best practices and technological innovations to your own supply chain in order to reduce such cycle and wait times and other waste in your in-house processes.

10.6 DEFINITIONS OF DIFFUSION

'Diffusion' is defined as a macro process that deals with the spread of a new product or service offering amongst the potential market; it relates to the acceptance/rejection of an innovation by the segment(s). 'Diffusion of Innovation' is defined as a process by which an innovation spreads amongst and gets the absorbed/accepted or assimilated by the market.

Schiffman defines 'diffusion', as "the process by which the acceptance of an innovation (a new product, new service, new idea, or new practice) is spread by communication (mass media, salespeople, or informal conversations) to members of a social system (a target market) over a period of time".

10.7 ELEMENTS OF DIFFUSION PROCESS

The definition comprises four basic elements of the diffusion process:

- **Innovation:** The term innovation refers to the newness of the product/ service offering.
- **Channels of Communication:** This includes-
  - Marketing communication that takes place between the marketer and the potential market, or the target segment; it could be personal (salesperson and consumer) or impersonal (via print or audio visual

media).

- Interpersonal communication that takes place between the consumers themselves or within members of the target segment(s); it could be word of mouth communication within consumers or through an opinion leader.

- **SocialSystem:** This refers to the social setting in which the diffusion takes place; it actually refers to the market segment(s) or the target market(s). The definition and scope of the social system depends on the product and service in question, its usefulness and its very basis for existence. In a way, it reflects the target market(s) for whom the product and service is designed, and within what segment(s), it would be diffused. For example, for a new herbal anti-wrinkle cream, the social system would be confined to ladies who are in their late 40s. The social system has wide repercussions on the diffusion of a product/service:
  - First, the new product and service is discussed and or evaluated within members of the social system through interpersonal communication, opinion leadership and word-of-mouth.
  - Second, the philosophy and the resultant orientation, with respect to culture, traditions, values and norms also impact the diffusion process. Thus, the social system impacts the ultimate adoption and assimilation of the innovative offering; in order to be accepted quickly and penetrate successfully, the marketer needs to keep this social system in mind and design his product and the marketing mix accordingly.
- **Time Factor:** Time is an important factor in the diffusion of innovation, as it determines the pace of adoption and resultant assimilation of the innovative offering; researchers have studied the impact of time in the following ways:
  - **The amount of purchase time:** The amount of purchase time refers to the average time that a consumer would take to adopt a new product and service offering; this would include the total time between the consumers' initial awareness to the final acceptance/rejection of the new product or service. Time as a factor has relevance for

the diffusion process in the sense that it helps assess the total time that it would take for a new product or service offering to get totally diffused and adopted by the market at large; when the average purchase time is less, it can be assumed that the rate of diffusion would be faster.

- The rate of adoption and the identification of adopter categories:

- **Rate of adoption:** The rate of adoption refers to the period that it is taken for a new product or service to be accepted by the target market(s). It is a measure of how long it takes a new product or service offering to be adopted by the members of the target market.

  With global advances in all respects, be it socio-economic, political, cultural and technological, the rate of adoption is getting faster. The marketer also aims at a rapid acceptance of his innovative offering, so that he can gain maximum advantage as a first-mover; thus he designs his marketing mix as per the needs of the segment(s), across international cultures and communities.

- **Adopter categories:** This refers to a classification scheme amongst members' of the target segment(s), which illustrates where one consumer stands in relation to another consumer with respect to time, that has lapsed between the introduction of the new product and service and the adoption by a consumer(s). Researchers have classified consumers into adopter and non-adopter categories, which range from two or three or five category classifications. It is noteworthy that the consumers would be classified based on the nature of the good or service.

10.8 DIFFUSION OF INNOVATION (DOI) THEORY

Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social

system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product (innovation) does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation. There are five established adopter categories, and while the majority of the general population tends to fall in the middle categories, it is still necessary to understand the characteristics of the target population. When promoting an innovation, there are different strategies used to appeal to the different adopter categories.

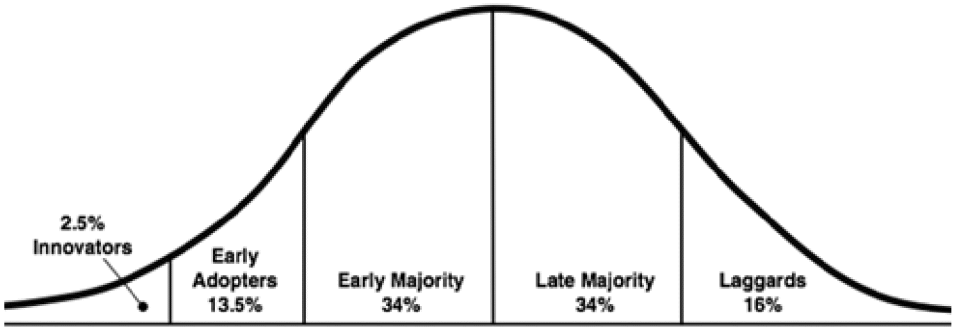
This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing. In public health, Diffusion of Innovation Theory is used to accelerate the adoption of important public health programs that typically aim to change the behavior of a social system. For example, an intervention to address a public health problem is developed, and the intervention is promoted to people in a social system with the goal of adoption. The most successful adoption of a public health program results from understanding the target population and the factors influencing their rate of adoption.

Diffusion of innovations theory is a hypothesis outlining how new technological and other advancements spread throughout societies and cultures, from introduction to wider-adoption. The diffusion of innovations theory seeks to explain how and why new ideas and practices are adopted, with timelines potentially spread out over long periods.This model helps a business to understand how a buyer adopts and engages with new products or technologies over time. Companies will use it when launching a new

product or service, adapting it or introducing an existing product into a new market.It shows how the product can be adopted by five different categories/ customer types and how to engage as a business with these types of people.

Classification of Adopters

Roger's has proposed a classification of adopters, according to which consumers can be divided into five categories based on the time taken by them to adopt a product. These five adopter categories are innovators, early adopters, early majority, late majority, and laggards. Based on research, it has been observed that the five categories when plotted on a graph, lead to a bell-shaped normal distribution curve.



Source: Diffusion and Innovation, E. M. Rogers (2003)

The five categories are explained as follows:

- **Innovators:** Innovators comprise 2.5 percent of the target market(s) adopters; they are those consumers' who are the first to go and purchase a new product or service offering. They purchase the new product and service offering not because they possess a need, but because they desire new ideas and concepts, and seek product and service innovations. They are high on self-confidence, and are always eager to try out new products/services. They have access to information about such new offerings, and are quick to purchase; one, because they have the interest and inclination to buy the 'new'; and two, because they have the purchasing power and the access. It is important to mention here, that innovators are not 'generic'; they are in most cases 'specific' to a product and service type.
- **Early adopters:** The next 13.5 percent of the target market(s) adopters are called early adopters. These are those consumers' who purchase

the new product and service offering not because they are fascinated towards the 'new', but because they possess a need. They generally tend to have some idea on the product/service category, and after gathering some more information about the product and or brand, they go in for purchase. Early adopters rely on group norms and also turn out to be good opinion leaders, and could be easy targets for the marketer.

- **Early majority:** The early majority is similar to the early adopter in the sense that they buy the product/service offering because they possess a need and wants to fulfill it; however, they are not as quick as the early adopters and take longer to enter into purchase. This is because unlike the earlier two categories, the early majority does not have much interest in the product/service category. Thus, the consumers that fall into this category have to collect information, evaluate it, deliberate carefully and then take a decision; thus, the process takes longer. The early majority make up the next 34 percent of the adopters.
- **Late majority:** The next 34 percent of the adopters are referred to as the late majority. They are referred to as 'late', because-
  - Members of their social class, reference group and peer group have already made the purchase; and the social influence is strong, and
  - They themselves have evaluated the new product and or service and are ready to buy it. They have a need, and after careful thought and deliberation as well as with social influence and pressure, the 'late majority' makes the purchase. By nature they are skeptical and confirm to social pressure. Interpersonal communication has a major role to play.
- **Laggards:** The laggards are the last to adopt a new product or service offering, and as such make up the last 16 percent of the target market. They are slow in buying the innovative offering because,
  - They are uninvolved with the product and service;
  - They do not possess much information;
  - They remain uninfluenced by social pressure, and social ties are not very strong;

- They believe in making routine purchases and prefer to buy the 'familiar', than the 'unfamiliar'.

Roger's classification only includes the adopters; there also exist in the market a group of people who do not venture out into seeking a particular product or service, as it may not confirm to their culture, socio-economic class or they may not have the need for such a product/ service. Such people fall into a class referred to as the non-adopters; a class that never adopts the new product/service, and in general comprises a very small portion of the entire population. Non-adopters may be classified into five categories, viz., the unaware group, symbolic rejecters, symbolic adopters, trail adopters and trial rejecters. The inclusion and study of the non-adopter category is crucial as it is reflective of reality, as not all consumers adopt all new product and service offerings.

- **UnawareGroup:** The non-adopters who are unaware about the new product or service offering.
- **SymbolicRejecters:** Those among the non-adopters who are aware of the product but feel that it is not meant for them because it does not meet a need or does not conform to socio-economic cultural norms.
- **SymbolicAdopters:** The symbolic adopters are aware of the innovative offering, and believe that the product or service may be of relevance for them, but they are yet to try the innovative offering.
- **TrailAdopters:** Such non-adopters have tried the innovative offering, but have not yet made a purchase; if they have made a trial purchase, they have yet not made a repurchase to confirm liking or habit formation.
- **Trial Rejecters:** Trial rejecters are those non-adopters who have tried the new product or service, but have not found it suitable; they have no intention in further purchase or repurchase.

10.9 FACTORS AFFECTING DIFFUSION OF INNOVATION

The diffusion of innovation and an adoption as a process is not

generic; it varies from product to product and or service to service. Some product or service offerings gain quick acceptance, and the diffusion is fast and rapid; for other products and services, the process may be slow and take considerable amount of time. For example, the colour TVs in India took a long time to get diffused, but for the satellite TV, the rate of diffusion was very fast. Also, the cordless telephone took a long time to get diffused into Indian homes, but the cell phone got readily accepted by all and diffusion was very fast. Thus, all products or services that are "new", do not possess the same ease and potential for consumer acceptance.

Diffusion of innovation and subsequent adoption is impacted by socio-economic, cultural, technological as well as legal factors; it is also impacted by individual determinants like psychological variables and demographics; these are all forces are in most cases "uncontrollable" by the marketer. There are also the more relevant forces, related to the innovative product and /or service which constitute what is called the 'controllables', and which are in the hands of the marketer; these could be in the form of marketing communication or interpersonal communication etc and could be used by the marketer in a manner that facilitate quicker and easier acceptance of the innovative offering. Apart from these, there are also certain characteristics that an innovation possesses that can impact the diffusion and adoption process. Researchers have identified certain factors that can act as triggers and some that can act as barriers to the diffusion and adoption process.

There are certain product and service characteristics that affect the diffusion process and can influence consumer acceptance of new products and services; the five factors that can impact the diffusion process and the rate of adoption are relative advantage, compatibility, complexity, trialability, and observability.

- **Relative Advantage:** The relative advantage of the innovative product/ service offering over already existing products/services accelerates its rate of adoption by the target market. The degree to which customers perceive a new product/service as superior to similar existing products determines the relative advantage. A product/service that provides

advantage over other existing products is indicative of being superior to existing alternatives, and thus higher in terms of 'value'. The more radical a change, and the higher the relative advantage, the faster would be the diffusion. The relative advantage may lie in terms of it being a modified product (with better features, attributes, benefits, form etc), or at a lower price (better deals, discounts, terms of payment, warranty and exchange), or more accessible in terms of availability (physical store format, or virtual electronic format), or better communication. Thus, while product-based advantages are more attractive in nature, the other components of the marketing mix like price, place and promotion can also provide a basis for relative advantage. Examples of innovations that provide relative advantage are flash drives versus compact discs, laptops versus computers, or digital libraries versus traditional libraries, ATMs versus bank teller counters.

- **Compatibility:** The compatibility of the innovative product and service offering with the existing backgrounds, behavior and lifestyle patterns of consumers also affects its adoption by the consuming public. The compatibility of a product/service measures how closely it relates to needs, value systems and norms, lifestyles, culture etc. The higher the level of compatibility, the quicker the diffusion; and the lower the compatibility, the slower the diffusion. A product will diffuse more quickly if it does not require consumers to change their values, norms, lifestyles, cultures and day to day behaviors. Continuous and dynamically continuous innovations are higher on compatibility than discontinuous innovations. Fast food in the form of pizzas, burgers, noodles etc. took considerable amount of time to get diffused into the Indian society, as it contrasted heavily with the dal-roti meal concept. The pace of adoption quickened in the 1990s and more so in the 2000s with the new generation, and their preference towards packaged foods and fast food. Another example that can be mentioned here is coconut oil as a medium of cooking would be incompatible to people staying in North India. Even if positioned as 'healthy and natural cooking medium', it would be slow to penetrate and may even fail if launched in North India. The same

would penetrate easily in South India, as it is culturally more compatible.

- **Complexity:** The level of complexity in a product purchase and usage also affects the diffusion process. An innovative offering would be easily diffused when there is ease of understanding, purchase and use. The easier it is to understand and use a product, the more likely it is to be accepted quickly, and vice versa.

  While speaking of complexity, technological complexity acts as a barrier to diffusion. People resist adoption of new products because of fear of complexity in purchase and usage. This is well understood by high tech industries. Let us take the example of the electronic goods industry, e.g. microwave ovens or vacuum cleaners. While designing their communication, the marketer illustrates ease of use, so as to encourage quicker acceptance; prospects are provided with demos and trials; once purchased, arrangements are made for providing installation at home. Another example is the mobile phone industry; realizing the problem of complexity, simpler models are introduced for those who desire the mobile set just for making and receiving calls and SMSs.

  It would be noteworthy to mention here that the youth are more techno savvy and have accepted electronic goods like MP3s and 4s, laptops, I-pods, ATMs etc much faster than the older generation. This is because the former have been able to deal with the complexity with a higher level of comfort than the older generation.

- **Trialability:** The ease with which the product or service can be tested and tried also determines the rate of acceptance. The higher the degree of trialability, the greater would be the rate of diffusion. This is because the prospects get an opportunity to try the product/service, assess it and decide to accept/reject it. Trialability can be encouraged by providing free samples, or providing smaller packs and smaller-than-average sizes, or even through demos and test runs (for consumer durables). Consumers could try out the innovative offering, evaluate it and then decide on a purchase commitment by accepting/rejecting it. Trials leading to purchase can be encouraged through guaranty and warranty

schemes. Such trials encourage a product/service to be diffused easily.

- **Observability:** Observability refers to the ease with which the product can be observed. Observability in an innovative product refers to the degree to which a product/service's benefits can be observed, imagined and perceived by a potential consumer. The higher the degree of observability, the greater the chances of the innovative offering being accepted by the prospects. Those new product offerings that are i) tangible, ii) have social visibility, and iii) whose benefits are readily observed (without much time gap), are more readily diffused than those that are intangible, or have no social visibility or whose benefits accumulate over long periods of time.

Thus, relative advantage, compatibility, complexity, trialability, and observability have an impact on the rate of diffusion. While all these factors relate to the product, they are dependent on consumer perception. A product/service offering that is relatively superior to existing ones, is more compatible to existing consumption behavior and usage, is less complex, easy to use and observable, and is more likely to be purchased quickly by the public, than when it is not.

10.10 BARRIERS TO THE DIFFUSION OF INNOVATION

There are also certain factors that negatively affect diffusion of innovation and subsequently the adoption process. These barriers have been dealt with extensively by consumer researchers 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 product 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 with 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; in other words, they find it to be incompatible with their existing behaviors. The barrier is more psychological, based on deep rooted values, beliefs, attitudes and perception, resultant in such behavior of non-acceptance and non-usage. For example, people are often reluctant to enter into online monetary transactions for fear of loss of privacy and fraud.

  Communication from the marketer based on rational and informational may not be sufficient to overcome such a barrier; he would need to use credible spokespersons, celebrities and experts to motivate people to change their existing lifestyle patterns and resultant behavior, and adopt the innovation.

- **Value:** Consumers 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, while assessing mobile charges, people compare the post-paid plans with the pre-paid plans in terms of rental as well as call charges, and conclude that the former are cheaper, in spite of rental being high.

  The perceived lack of value may be i) the product/service does not provide much benefit over the existing alternatives; ii) the product/service is costly, and doesn't seem to be of worth the price.

  Consumers' perception of 'high price' always takes over the perception over product value or product benefit; in fact, values is always assessed in terms of price; Also, price is a 'catchy' issue than the benefits attached; price appears more tangible, than benefits; and, consumers generally tend to know more quickly about price, than they do about the

benefits that the product brings along with it.

- **Risk:** Risk also acts as a barrier to diffusion of innovation. Consumers show reluctance to use an innovative product/service offering out of fear of taking risks. There could be six types of risks that a consumer 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), psychological risk (would the innovation hurt consumers' ego), and time risk (would it lead to wastage of time spent while making the purchase).

  The perceived risk barrier acts as a big barrier to the diffusion and adoption process; consumers are fearful of purchase, usage and consumption of innovative offerings, and thereby continue to patronize the existing alternatives, rather than adopt new ones (for fear of making a wrong decision).

  In order to overcome this problem, the marketers could make use of both marketing communication (via audio-visual or print media, or company salespersons) as well as interpersonal communication (opinion leadership, word-of-mouth communication). Trials (free or discounted) as well as interpersonal communication with peers, colleagues and friends can also encourage personal experience by the consumer and help overcome this risk.

- **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 behavior 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, wearing

western outfits is a taboo for women in the Middle East, and as such they would never attempt to wear skirts or trousers. Another example, Kelloggs Cornflakes, found it difficult to penetrate the Indian soil, primarily because it was positioned as a quick breakfast cereal to be had in cold milk, as opposed to the traditional Indian concept of cornflakes or cereal in hot milk.

Image barrier refers to the 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. Thus, marketers try to come up with variants in offerings, and have separate names for separate variants depending upon the segment(s) for which they are aimed.

10.11 ADOPTION PROCESS

The second major process in Diffusion of Innovation is 'Adoption'. Adoption is a micro concept that lays emphasis on the various phases or stages through an individual consumer passes while accepting/rejecting a new product or service offering. The study of adoption is important for a marketer in the sense that it helps him understand the various stages through which a consumer passes right from his initial awareness to the final acceptance/rejection. It may so happen that the innovative offering may exist for long in the market, but the consumer is unaware of it; or, it may have existed in the market for long, but is regarded as 'new' because the consumer has heard of it for the first time. This implies that consumers could differ in the manner they complete their purchase activity, right from initial awareness to the final act of purchase. This could mean that the marketer needs to design his selling strategy accordingly.

Schiffman defines adoption as "the stages through which an individual consumer passes while arriving at a decision to try or not to try or

to continue using or to discontinue using a new product".

Consumer researchers have proposed a number of models to describe the steps in the adoption process, viz., Heirarchy of Effects' Model, Robertson's model, and Roger's model. The models explain the stages through which a prospect passes to end up being a consumer, right from the stage of initial awareness to final adoption.

Generally speaking, the consumer passes through five stages of adoption, viz., awareness, interest, evaluation, trial, and adoption (or rejection). The assumption underlying this general model of adoption is that when a new product/service is introduced, prospects go through an information search which could range between limited to extensive; of course, for some products this search is highly limited (routine purchases). The five stages are explained below:

- **Awareness:** This is the first stage in the adoption process, where the consumer is exposed to the new product/service offering, and gets to know of the product. The marketers' objective here is to provide some awareness about the innovation, the features and benefits as also the brand. The consumer is generally passive and acts as a mere recipient of information. He becomes aware but lacks sufficient knowledge about the new offering.
- **Interest:** In this next stage, the consumer begins to develop some interest in the innovative offering, and thereby puts in some effort to know more about it. The consumer becomes active in his search for information and tries to elaborate on the information received at the awareness stage. He actively searches for information about the new product / service and tries to assess how it can benefit him.
- **Evaluation:** The consumer who has acquired knowledge about the innovation, now begins to evaluate; he evaluates whether, i) more information search is necessary with respect to the innovation as well as to the brand; ii) he is sufficient with the product/service information that he possesses. The consumer also evaluates the innovative offering in terms of the attributes, features, and overall benefits, as compared to existing alternatives; he assesses the 'value' of the product/service

offering and the brand. If he feels that the offering provides 'value', he goes in for the next stage which is trial; else the process is aborted, and the innovation rejected.

- **Trial:** The consumer goes and tries out the innovative offering, but there is not yet any further purchase (repurchase) commitment. The product/ service is experienced on a small scale and used on a limited basis only, to determine the worth or usefulness.
- **Adoption (Rejection):** Based on the trial stage, and the resultant experience, the consumer would decide to decision to use/reuse/ patronize the offering. If the experience is satisfying, and the evaluation favorable, the innovative offering would be accepted, else it would be rejected.

10.12 CULTURE AND DIFFUSION OF INNOVATIONS

The relationship between culture and diffusion and adoption of innovations is two-fold. In fact the relationship existing between culture and innovation is a deeply interactive one. The consequences of the acceptance of an innovation can be such that some aspects of the cultural system in which the innovation takes place, may be affected. In such cases, a cultural change movement is generated. The innovation contributes to the development of a cultural system rather than being affected by it.

In order to understand the impact of culture upon diffusion, it is first necessary to realize that the diffusion of an innovation never operates in a vacuum but within the boundaries of a social system, the precise nature of this social system depending upon the type of innovation being considered. It is also possible to think of the social system in terms of age, income, social class or any other criteria of market segmentation.

Rogers categorised the determinants in five categories, based on research up to 2003. Based on the findings of this study and the other studies it appears meaningful to add a sixth category i.e. culture. With this addition, it is likely that we can get more precise insight into what determines the rate of adoption of an innovation.

The word 'culture' has different meanings in different contexts. Often a specifying word is put in front of 'culture' to identify a specific type of culture, for instance, national culture, community culture, or company culture. The early diffusion of innovation research appears to have focused mainly on community culture. This may have to do with the fact that most studies in early diffusion research took place at a community or village level. As presented by Rogers, norms and network interconnectedness are two aspects of variable nature of the social system. Culture may be related to the social system and, indeed, to the other variables as well. National culture is not explicitly included in Roger's overview of variables that determine the rate of adoption of an innovation.

Individualistic cultures are those in which the individual's goals take precedence over the collectivity's goals. Collectivistic cultures are those in which the collectivity's goals take precedence over those of the individual. Each type of culture may have different influence on the adoptive process.In a collective culture, the innovation-decision process may be based on what the community as a whole decides or what community elders decide, whereas in an individualistic culture, the innovation-decision is based on the individual's decision. This attests to the influence of culture on the adoptive process. Here, norms, values, beliefs, and attitudes are considered cultural variables that not only can be part of a community culture but also can be part of a national culture.

10.13 COMMUNICATION AND DIFFUSION

Communication and diffusion are interdependent. Communication is the interchange of ideas between two persons, in such a way that they act on the existing knowledge to achieve some useful results. The transfer of message through suitable medium performs the communication. Diffusion is the process by which an innovation is communicated through certain channels overtime among the members of a social system. In other words, diffusion is the communication process through which an innovation travels or spreads through certain channels from a person, an organization,

or any unit of adoption to another within a social system over time.

Adoption of an innovation is the decision (i.e., acceptance or rejection) and the subsequent implementation, discontinuance, and/or modification by an individual or an organization. Therefore, adoption is an individual or organizational process that leads to diffusion as a systemic process.The diffusion of an innovation is the spread of a product, process, or idea perceived as new, through communication channels, among the members of a social system over time. Innovations can be a new product or output, a new process or way of doing something, or a new idea or concept.

Communication channels play an important role in diffusion. Because the innovation is a new product, process, or idea, it must be communicated to potential adopters in order for them to assess its attributes and decide whether to try out and eventually adopt it. Mediated communication and interpersonal communication play complementary, but different roles. Electronic mass media channels such as television and radio are useful for raising awareness about the innovation, but cannot provide much detail. They can provide images and brand name identification, helping the attributes of compatibility and observability. Print mass media channels such as newspapers and magazines are useful for explaining conceptual and technical details, helping out with the attributes of relative advantage and complexity. New media such as the internet with World Wide Web can provide interesting mixtures of image, explanation, and demonstrations, thus also fostering trialability.



CHECK YOUR PROGRESS

Q 1: Write True or False:

a) Line extensions are continuous innovations.

b) Innovators comprise 13.5 percent of the target market(s) adopters.

c) Innovators are 'generic'; they are 'not specific' to a product and service type.

Q 2: Fill up the blanks:

a) As per the _____ approach, a product or service offering is regarded as 'new', if the company starts manufacturing or marketing it for the first time.

b) As per the product-oriented approach, innovations can be classified into three categories, continuous innovations, _____ innovations, and _____ innovations.

c) Amidst the varying perspectives and orientations, the approach(es) that receives wide attention are the _____and the consumer-oriented approaches to studying 'innovation'.

d) Generally speaking, the consumer passes through five stages of adoption, viz., awareness, _____, _____trial, and adoption (or rejection)

Q 3: Choose the correct answer:

a) Which of the following statements is false?

i) In discontinuous innovations, there is a change not only in the technology, but also in behavioral patterns of usage and consumption.

ii) Continuous innovations do not disrupt established usage and behavior patterns

iii) Line extensions are discontinuous innovations.

iv) All of the above.

b) Roger's has proposed a classification of adopters. The five adopter categories as per sequence are:

i) Innovators, early adopters, early majority, late majority, and laggards.

ii) Innovators, early majority, early adopters, late majority, and laggards

iii) Innovators, early majority, late majority, early adopters, and laggards

iv) None of the above.

c) Which of the following is not a stage in Rogers Model of adoption?

i) Knowledge

ii) Persuasion

iii) Liking

iv) Confirmation



10.14 LET US SUM UP

- In broad t
- In broad t
- In broad t



10.15 FURTHER READING

1) Marketing Management by Philip Kotler

2) Consumer Behaviour by Leon G. Schiffman, Joseph Wisenblit and S. Ramesh Kumar



10.16 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: a) True b) False c) False

Ans to Q No 2: a) Firm b) Dynamically continuous, Discontinuous

c) Market-oriented d) Interest, Evaluation

Ans to Q No 3: a) iii b) i c) iii



10.17 MODEL QUESTIONS

Q 1: Give an example of a discontinuous innovation.

Q 2: Define the following:

a) Dynamically continuous innovation

b) Diffusion of innovation

Q 3: Write short notes on the following:

a) Diffusion process

b) Adoption process

c) Factors affecting the diffusion of innovation

d) Time Factor In Diffusion Process

e) Culture and diffusion

f) Communication and diffusion

Q 4: The term 'innovation' has been described with varying perspectives and orientations. Mention any three orientations.

Q 5: Innovations are measured on two dimensions. Name them.

Q 6: Consumer researchers have proposed a number of models to describe the steps in the adoption process. Mention any two.

Q 7: Explain the varying perspectives to defining 'Innovation'.

Q 8: Write a note on the classification of New Product Innovations. Also give examples.

Q 9: Explain what you mean by 'Adopter Categories'.

Q 10: Explain the various stages in the Adoption Process.

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