**Lesson 07**

**Diffusion of Innovations**

**Objectives of the lesson**

**The objectives of the lesion is to make the students understand how an :**

* Innovation spreads over time
* Channels of diffusion
* Community habit of adapting innovation
* Identifying laggards and facilitate them to adopt new innovations

**Lesson outcome**

After attending the classes and completing the lesson, the students will be able to make a plan of diffusion of various innovations to the targeted audiences. The will also be able to bring about expected changes in community behavior.

**Diffusion of innovations** is a theory which explains how, why, and at what rate new [ideas](https://en.wikipedia.org/wiki/Idea) and [technology](https://en.wikipedia.org/wiki/Technology) spread. [Everett Rogers](https://en.wikipedia.org/wiki/Everett_Rogers), a professor of [communication studies](https://en.wikipedia.org/wiki/Communication_studies), popularized the theory in his book *Diffusion of Innovations*; the book was first published in 1962.

Rogers argues that diffusion is the process by which an [innovation](https://en.wikipedia.org/wiki/Innovation) is communicated over time among the participants in a social system. The origins of the diffusion of innovations theory are varied and span multiple disciplines.

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](https://en.wikipedia.org/wiki/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](https://en.wikipedia.org/wiki/Critical_mass_%28sociodynamics%29).

The categories of adopters are innovators, [early adopters](https://en.wikipedia.org/wiki/Early_adopters), early majority, late majority, and laggards. Diffusion manifests itself in different ways and is highly subject to the type of adopters and innovation-decision process. The criterion for the adopter categorization is innovativeness, defined as the degree to which an individual adopts a new idea.

The [concept of diffusion](https://en.wikipedia.org/wiki/Trans-cultural_diffusion) was first studied by the French [sociologist](https://en.wikipedia.org/wiki/Sociologist) [Gabriel Tarde](https://en.wikipedia.org/wiki/Gabriel_Tarde) in late 19th century and by German and Austrian [anthropologists](https://en.wikipedia.org/wiki/Anthropologists) and [geographers](https://en.wikipedia.org/wiki/Geographers) such as [Friedrich Ratzel](https://en.wikipedia.org/wiki/Friedrich_Ratzel) and [Leo Frobenius](https://en.wikipedia.org/wiki/Leo_Frobenius). The study of diffusion of innovations took off in the subfield of [rural sociology](https://en.wikipedia.org/wiki/Rural_sociology) in the midwestern United States in the 1920s and 1930s. Agriculture technology was advancing rapidly, and researchers started to examine how independent farmers were adopting hybrid seeds, equipment, and techniques. A study of the adoption of hybrid corn seed in Iowa by Ryan and Gross (1943) solidified the prior work on diffusion into a distinct paradigm that would be cited consistently in the future. Since its start in rural sociology, diffusion of Innovations has been applied to numerous contexts, including [medical sociology](https://en.wikipedia.org/wiki/Medical_sociology), [communications](https://en.wikipedia.org/wiki/Communication), [marketing](https://en.wikipedia.org/wiki/Marketing), [development studies](https://en.wikipedia.org/wiki/Development_studies), [health promotion](https://en.wikipedia.org/wiki/Health_promotion), [organizational studies](https://en.wikipedia.org/wiki/Organizational_behavior), [knowledge management](https://en.wikipedia.org/wiki/Knowledge_management), and [complexity studies](https://en.wikipedia.org/wiki/Complex_systems), with a particularly large impact on the use of medicines, medical techniques, and health communications. In organizational studies, its basic epidemiological or internal-influence form was formulated by H. Earl Pemberton, who provided examples of institutional diffusionsuch as postage stamps and standardized school ethics codes.

In 1962, [Everett Rogers](https://en.wikipedia.org/wiki/Everett_Rogers), a professor of rural sociology, published his seminal work: *Diffusion of Innovations*. Rogers synthesized research from over 508 diffusion studies across the fields that initially influenced the theory: [anthropology](https://en.wikipedia.org/wiki/Anthropology), early sociology, [rural sociology](https://en.wikipedia.org/wiki/Rural_sociology), [education](https://en.wikipedia.org/wiki/Education), [industrial sociology](https://en.wikipedia.org/wiki/Industrial_sociology) and [medical sociology](https://en.wikipedia.org/wiki/Medical_sociology). Using his synthesis, Rogers produced a theory of the adoption of innovations among individuals and organizations. *Diffusion of Innovations* and Rogers' later books are among the most often cited in diffusion research. His methodologies are closely followed in recent diffusion research, even as the field has expanded into, and been influenced by, other methodological disciplines such as [social network analysis](https://en.wikipedia.org/wiki/Social_network_analysis) and communication.

**Elements**

The key elements in diffusion research are:

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| **Element** | **Definition** |
| Innovation | Innovations are a broad category, relative to the current knowledge of the analyzed unit. Any idea, practice, or object that is perceived as new by an individual or other unit of adoption could be considered an innovation available for study.  |
| Adopters | Adopters are the minimal unit of analysis. In most studies, adopters are individuals, but can also be organizations (businesses, schools, hospitals, etc.), clusters within social networks, or countries.  |
| Communication channels | Diffusion, by definition, takes place among people or organizations. Communication channels allow the transfer of information from one unit to the other.Communication patterns or capabilities must be established between parties as a minimum for diffusion to occur.  |
| Time | The passage of time is necessary for innovations to be adopted; they are rarely adopted instantaneously. In fact, in the Ryan and Gross (1943) study on hybrid corn adoption, adoption occurred over more than ten years, and most farmers only dedicated a fraction on their fields to the new corn in the first years after adoption.  |
| Social system | The social system is the combination of external influences (mass media, organizational or governmental mandates) and internal influences ([strong and weak social relationships](https://en.wikipedia.org/wiki/Interpersonal_ties), distance from [opinion leaders](https://en.wikipedia.org/wiki/Opinion_leadership)). There are many roles in a social system, and their combination represents the total influences on a potential adopter. |

**Characteristics of innovations**

**Relative advantage:** The perceived efficiencies gained by the innovation relative to current tools or procedures), its compatibility with the pre-existing system, its complexity or difficulty to learn, its trialability or testability, its potential for reinvention (using the tool for initially unintended purposes), and its observed effects. These qualities interact and are judged as a whole. For example, an innovation might be extremely complex, reducing its likelihood to be adopted and diffused, but it might be very compatible with a large advantage relative to current tools. Even with this high learning curve, potential adopters might adopt the innovation anyway.

Studies also identify other characteristics of innovations, but these are not as common as the ones that Rogers lists above. The fuzziness of the boundaries of the innovation can impact its adoption. Specifically, innovations with a small core and large periphery are easier to adopt.[[24]](https://en.wikipedia.org/wiki/Diffusion_of_innovations#cite_note-24) Innovations that are less risky are easier to adopt as the potential loss from failed integration is lower. Innovations that are disruptive to routine tasks, even when they bring a large relative advantage, might not be adopted because of added instability. Likewise, innovations that make tasks easier are likely to be adopted. Closely related to relative complexity, knowledge requirements are the ability barrier to use presented by the difficulty to use the innovation. Even when there are high knowledge requirements, support from prior adopters or other sources can increase the chances for adoption.

**Characteristics of individual adopters**

Like innovations, adopters have been determined to have traits that affect their likelihood to adopt an innovation. A bevy of individual personality traits have been explored for their impacts on adoption, but with little agreement. Ability and motivation, which vary on situation unlike personality traits, have a large impact on a potential adopter's likelihood to adopt an innovation. Unsurprisingly, potential adopters who are motivated to adopt an innovation are likely to make the adjustments needed to adopt it. Motivation can be impacted by the meaning that an innovation holds; innovations can have symbolic value that encourage (or discourage) adoption. First proposed by Ryan and Gross (1943), the overall connectedness of a potential adopter to the broad community represented by a city. Potential adopters who frequent metropolitan areas are more likely to adopt an innovation. Finally, potential adopters who have the power or agency to create change, particularly in organizations, are more likely to adopt an innovation than someone with less power over his choices.

**Characteristics of organizations**

Organizations face more complex adoption possibilities because organizations are both the aggregate of its individuals and its own system with a set of procedures and norms. Three organizational characteristics match well with the individual characteristics above: tension for change (motivation and ability), innovation-system fit (compatibility), and assessment of implications (observability). Organizations can feel pressured by a tension for change. If the organization's situation is untenable, it will be motivated to adopt an innovation to change its fortunes. This tension often plays out among its individual members. Innovations that match the organization's pre-existing system require fewer coincidental changes and are easy to assess are more likely to be adopted. The wider environment of the organization, often an industry, community, or economy, exerts pressures on the organization, too. Where an innovation is diffusing through the organization's environment for any reason, the organization is more likely to adopt it. Innovations that are intentionally spread, including by political mandate or directive, are also likely to diffuse quickly.

**Process**

Diffusion occurs through a five - step decision-making process. 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 identified 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. Abrahamson examined this process critically by posing questions such as: How do technically inefficient innovations diffuse and what impedes technically efficient innovations from catching on? Abrahamson makes suggestions for how organizational scientists can more comprehensively evaluate the spread of innovations. In later editions of *Diffusion of Innovation*, Rogers changes his terminology of the five stages to: knowledge, persuasion, decision, implementation, and confirmation. However, the descriptions of the categories have remained similar throughout the editions.



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| **Five stages of the adoption process** |
| **Stage** | **Definition** |
| Knowledge | The individual is first exposed to an innovation, but lacks information about the innovation. During this stage the individual has not yet been inspired to find out more information about the innovation. |
| Persuasion | The individual is interested in the innovation and actively seeks related information/details. |
| Decision | 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 on which to acquire empirical evidence. |
| Implementation | The individual employs the innovation to a varying degree depending on the situation. During this stage the individual also determines the usefulness of the innovation and may search for further information about it. |
| Confirmation | The individual finalizes his/her decision to continue using the innovation. This stage is both intrapersonal (may cause [cognitive dissonance](https://en.wikipedia.org/wiki/Cognitive_dissonance)) and interpersonal, confirmation the group has made the right decision. |

Decisions

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.

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

**Rate of adoption**

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 rates of adoption for innovations are 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.

Within the [adoption curve](https://en.wikipedia.org/wiki/Adoption_curve) at some point the innovation reaches [critical mass](https://en.wikipedia.org/wiki/Critical_mass_%28sociodynamics%29). This is when the number of individual adopters ensures that the innovation is self-sustaining.

**Adoption strategies**

Rogers outlines several strategies in order to help an innovation reach this stage, including when an innovation adopted by a highly respected individual within a [social network](https://en.wikipedia.org/wiki/Social_network) and creating an instinctive desire for a specific innovation. Another strategy includes injecting an innovation into a group of individuals who would readily use said technology, as well as providing positive reactions and benefits for early adopters.

**Diffusion vs adoption**

Adoption is an individual process detailing the series of stages one undergoes from first hearing about a product to finally adopting it. Diffusion signifies a group phenomenon, which suggests how an innovation spreads.

**Adopter categories**

Rogers defines an adopter category as a classification of individuals within a [social system](https://en.wikipedia.org/wiki/Social_system) on the basis of innovativeness. In the book *Diffusion of Innovations*, 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](https://en.wikipedia.org/wiki/Sigmoid_function) when plotted over a length of time. The categories of adopters are: innovators, [early adopters](https://en.wikipedia.org/wiki/Early_adopters), early majority, late majority and laggards. In addition to the gatekeepers and opinion leaders who exist within a given community, change agents may come from outside the community. Change agents bring innovations to new communities– ﬁrst through the gatekeepers, then through the opinion leaders, and so on through the community.

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| **Adopter category** | **Definition** |
| Innovators | Innovators are willing to take risks, have the highest social status, have financial liquidity, are social and have closest contact to scientific sources and interaction with other innovators. Their risk tolerance allows them to adopt technologies that may ultimately fail. Financial resources help absorb these failures. |
| [Early adopters](https://en.wikipedia.org/wiki/Early_adopters) | These individuals have the highest degree of [opinion leadership](https://en.wikipedia.org/wiki/Opinion_leadership) among the adopter categories. Early adopters have a higher social status, financial liquidity, advanced education and are more socially forward than late adopters. They are more discreet in adoption choices than innovators. They use judicious choice of adoption to help them maintain a central communication position. |
| Early Majority | They adopt an innovation after a varying degree of time that is significantly longer than the innovators and early adopters. Early Majority have above average social status, contact with early adopters and seldom hold positions of [opinion leadership](https://en.wikipedia.org/wiki/Opinion_leadership) in a system ([Rogers 1962](https://en.wikipedia.org/wiki/Diffusion_of_innovations#CITEREFRogers1962), p. 283) |
| Late Majority | They adopt an innovation after the average participant. 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, little financial liquidity, in contact with others in late majority and early majority and little [opinion leadership](https://en.wikipedia.org/wiki/Opinion_leadership). |
| Laggards | They are the last to adopt an innovation. Unlike some of the previous categories, individuals in this category show little to no opinion leadership. These individuals typically have an aversion to change-agents. Laggards typically tend to be focused on "traditions", lowest social status, lowest financial liquidity, oldest among adopters, and in contact with only family and close friends. |

**(Source: Wikipedia)**