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Diffusion of Innovation: Using Training to Help Laggards to Excel

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Abstract

Diffusion of an innovation is the amount of time required for a new concept to be accepted by a group (Rogers, 1962, 2003). Five categories have been established to show the different characteristics to the diffusion process: Innovators, Early Adopters, Early Majority, Late Majority, and Laggards. The focus of this thesis is to examine the characteristics of laggards and gain insight into how innovators perceive laggards training of an innovation. Laggards in a training situation are members of a group that learn an innovation at a slower rate. Ten Interviews were conducted using participants with a minimum of a bachelor's degree and five years experience with innovations and training. Understanding how laggards view training and having the ability to identify laggards early in a training situation will reduce downtime and limit the amount of resources used. It may also provide the trainee with a higher self-efficacy and the desire to perform at a higher capacity.

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Introduction

The concepts of laggards in a training situation are salient to the effective operation of any organization. Training is the method of teaching new members of the organization proper techniques and procedures to run efficiently. Having a complete understanding of the characteristics of laggards will help organizations develop training programs to best determine the use of resources. The results of this study help to give examples for how best to organize and conduct training at its maximum efficiency.

Literature Review

The definition of innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 1962, 2003). Correspondingly, the definition of diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1962, 2003; Williams, Rice, & Rogers 1988). Hence, diffusion of an innovation is the process for a new idea to be accepted by a social group over a period of time, which in many cases could be years. (Haider & Kreps 2004; Rogers, 1962, 1969 2003, 2004; Rogers & Agarwala-Rogers 1976). Critical mass (Rogers, 1990,2003; Somasundaram, 2004; Williams, Rice, & Rogers 1988) is the point where diffusion becomes self-sustaining. The sooner this point is reached an innovation will diffuse more quickly. The result of an innovation when mapped out forms an S-shaped curve, representing the cumulative number of adopters (for example, *see Table 1*) (Grantham & Tsekouras 2005; Rogers, 1962, 1969, 2004; Rogers & Shoemaker 1971). When the innovation is plotted with the amount of adopters in each time period separately, the graph takes on the shape of a normal bell curve (for example, *see Table 1*) (Rogers, 2003).

Many different concepts affect the rate of diffusion of an innovation, which can have positive or negative effects in determining how much time is required for diffusion. The theory of the threshold model (Granovetter, 1978) used riots to explain how the model operates. The decision the actor makes is determined by the cost and benefit of that decision. An individual with a low level of threshold would be involved in a “riot” before an actor with a high level of threshold. An innovator would have a low level of threshold while laggards would have a high level of threshold. For example, an individual’s threshold level can vary with social structure. A person with a high threshold level would like to see an innovation in progress before trying and will have a lower level of threshold if trusted friends have tried or are using the innovation. Thresholds change with each different situation that the individual encounters. An individual experiencing bandwagon effect (Granovetter, 1978) would make a completely different decision then when they are confronted by a large number of people involved in the same situation.

Different types of media used will influence the speed of diffusion. Media enrichment theory (Sheer & Chen, 2004) is the process of determining the richness of the media. The richest media is face-to-face, with a memo as the leanest. Richer media will be diffused more slowly, because word of mouth takes longer to reach all the members of a social group. Correspondingly, leaner forms of communications will reach larger numbers more quickly. Mass media (radio, TV, newspaper) is a leaner media and can reach a large number of people in a shorter amount of time (Reardon & Rogers 1988; Valente, Paredes, & Poppe 1998), but can leave unanswered questions. Universal service (Markus, 1990) is a term used when an innovation has reached almost everyone. Universal access (Markus, 1990) is the ability of any member of the community to reach all other members of the community. Moreover, according to Lim, Choi,

and, Park (2003) having limited access to technology will result in slower adaption. All of these must be considered in order to produce an effective training environment.

The beginning of studying the diffusion of innovation was a study performed by Ryan and Gross in 1943 (Rogers, 2003) on hybrid seed corn in Iowa. These early rural sociologists were the first to empirically explore the nature of diffusion theory. Based on the number of published diffusion papers, the leading fields today are Rural Sociology, Marketing and Management, and Communications, respectively (Rogers, 2003). The categories used by all fields are: Innovators (2.5%), Early Adopters (13.5%), Early Majority (34%), Late Majority (34%), and Laggards (16%) (for example, *see Table 1*) (Rogers, 1962, 1969, 2003; Rogers & Shoemaker, 1971).

Innovators are the group of people that have extra resources and can afford a potential loss if the innovation does not take off. They are capable of understanding, applying complex ideas, and are perceived as having the values of venturesomeness. Early Adopters are the group that has the highest amount of opinion leaders. An opinion leader is a member of a social group that has the respect of the other members of the same social group. When these individuals adopt an innovation, the other members of the system feel more comfortable adopting themselves. Members of the Early Majority are interconnected with peers, but seldom hold positions of opinion leaders. This group is full of cautious individuals that like to see the innovation work properly before adopting. Late Majority refers to the group that takes precautions, because members may have economic constraints that keep them from diffusing the innovation. Sometimes the members of the group are forced into adopting, because the other members of the group pressure them into adopting. Laggards, the purpose of this study, are the last to adopt a innovation, and view the innovation as unimportant. They usually have fixed resources and

cannot take a loss if the innovation is a fad. Laggards are usually uncertain of new technology and must be completely convinced the innovation is here to stay. A new category to consider adding would be placed in the similar area under the curve as the innovators, but at the opposite end, is the innovation dislikers. This group simply does not have the slightest interest in the innovation (Lieven & Gino, 2003; Wei, 2001).

Stages of Innovation Decision Process

Innovation decision process stages and their components illustrate how the selection of an innovation is determined. These stages show the process that any organizational leader must take when deciding which innovation will best fit their organization. Concepts of the innovation decision process have been developed over many years and help to determine how to reach the critical mass sooner (Rogers, 1990). The Innovation-Decision Process is broken down into five different stages: Knowledge, Persuasion, Decision, Implementation, and Confirmation (Rogers, 2003; Williams, Rice, & Rogers, 1981).

Knowledge occurs when an individual or group is exposed to an innovation's existence and gains an understanding of how it functions. The persuasion stage of the innovation process is the point where the individual or group have learned of an innovation and are ready to learn more and begins to consider the "what if's". Decision Stage is where an innovation will be adopted or rejected. Companies have developed many techniques to aid in the decision of choosing their products. One such technique is to offer innovations on a trial basis.

Implementation occurs when an individual puts an innovation to use; there are still questions about the innovation along with some uncertainty. Products that can be re-invented, customized to a certain situation, will be adopted quicker. The Confirmation Stage is the point where the individual seeks reinforcement about the decision made and may reverse this decision if they are

exposed to conflicting messages about the innovation (Rogers, 2003; Williams, Rice, & Rogers, 1981).

Attributes of the Diffusion of Innovation

Five attributes help to explain the rate of adoption of an innovation: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988).

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes and contains many aspects (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988). Economic factors are as a product is sold over time the price tends to drop. The fact that when the price of an innovation drops the relative advantage of that innovation goes up, which causes the rate of the innovation to accelerate. Status aspects are a salient factor of adoption process. Fads are when a certain innovation diffuses rapidly for status reasons and then are rapidly discontinued. The reason for this “fad” aspect is people want to be known for having the newest innovation (clothing, hair styles, cars, and computer applications). When too many people are using an innovation the status of having the innovation drops and discontinuance occurs. Over adoption is when an individual feels that they need to have anything new. Buying a new “fad” product and then never using it would be an example of over adoption. The relative advantage, as perceived by members of a social system, is positively related to its rate of adoption.

Preventive innovations are new ideas that an individual’s adopt now in order to lower the probability of some unwanted future event and are adapted at a slower rate, because the event may or may not occur (Rogers, 2003; Schuster, D. V. et al.). Common preventive innovations used today are ways to quit smoking. There are several studies that show smoking could affect

ones health. The problem is that adverse effects of smoking can take years to show and it's difficult for people to expect it could happen to them.

Compatibility (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988) is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. The ability to use a USB connection on all computers has improved and streamlined the way documents can be transferable. Moreover, has made the computer more user friendly. Compatibility of an innovation, as perceived by members of a social system, is positively related to its rate of adoption (Rogers, 2003).

Complexity (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988) is the degree to which an innovation is perceived as relatively difficult to understand and use. Some innovations are easily understood, while some are not. When home computers were first being introduced, the people that bought and could afford a home computer were hobbyists and individuals who needed the latest innovation. As the computer became more user friendly, the rate of adoption increased. Complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption.

Trialability (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988) is the degree to which an innovation may be experienced on a limited basis. An example would be a free 30-day trial for software, which allows a person to use the software, become acquainted, and then buy after they know how to run the software. Trialability of an innovation, as perceived by the members of a social system, is positively related to its rate of adoption.

Observability (Rogers, 2003; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988) is the degree to which the results of an innovation are visible to others. Using cell phones allows others to see how popular they have become, which will lead laggards to become more

comfortable using the technology. Observability of an innovation, as perceived by members of a society system, is positively related to its rate of adoption.

Stages of Diffusion of Innovations in an Organization

There are three types of innovation-decisions in an organization. Optional innovation-decisions are choices to adopt or reject an innovation made by the individual. This process is the highest form of diffusion, only one person is involved in the decision making process. Collective innovation-decision refers to the choices to adopt or reject that are made by a group, which slows the rate of diffusion due to the different social statuses and backgrounds of the individuals. The process can be bogged down by lobbyists and different vendors, which also slows the process because so many people have a say in the decision. Authority innovation-decisions occur when a top member of an organization makes the call. This diffusion of the innovation is the decision of the organizational leadership, but must be carried out by the rest of the system (Rogers, 2003; Rogers & Shoemaker, 1971).

In today's world there are many types of organizations. An organization is a stable system of individuals who work together to achieve common goals through a hierarchy of ranks and a division of labor. The typical organizational structure is obtained through predetermined goals, which are what an organization attempts to achieve. Prescribed roles recognize that every member in the organization has a duty to perform to insure that the goals of the organization are met. Authority structure is the hierarchy of the organization and insures that each member of the group is striving toward the goals. Rules and regulations are applied to insure the goals are met in an efficient and safe manner. Every organization has interworkings that are different than the next organization. Virtual organizations can work 24-hours a day with people all over the world

connected through the World Wide Web (Hossain & Wigand, 2004; Rogers, 2003). These organizations are popular because they can be run without an office.

Organizations have the same qualities apply to them as individuals. Larger organizations are more innovative (Rogers, 1962, 1969, 2003; Rogers & Agarawala-Rogers, 1976; Rogers & Shoemaker, 1971; Williams, Rice, & Rogers, 1988). Organizational structural variables affect the innovativeness of the organization. Centralization is the degree to which power and control in a system are concentrated in the hands of a relatively few individuals. Complexity is the degree to which an organization's members possess a relatively high level of knowledge and expertise. Formalization is the degree which an organization emphasizes its members to follow rules and procedures. Interconnectedness is the degree to which the units in a social system are linked by interpersonal networks. Organizational slack is the degree to which uncommitted resources are available to an organization. A champion is a charismatic individual who throws their weight behind an innovation, thus overcoming indifference or resistance that the new idea may provoke in an organization. The presence of an innovation champion contributes to the success of an innovation in an organization. This is similar to an opinion leader (Rogers 1962, 2003; Rogers & Agarwala, 1976; Rogers & Shoemaker, 1971; Valente, 2006).

Training and Diffusion

The issue of training is one of the most salient topics in the diffusion process of an innovation. Understanding how people learn and the problems that can occur will give tremendous insight on the best techniques to be used during the training process (Adria & Rose, 2004; Carr & Chambers, 2006; Drenogianni, 2004; Van Den Hoofe, 2005). Interactive technologies, which are systems such as e-mail, voice mail, and Internet applications are expanding at an accelerated rate and require constant vigilance in staying on the cutting edge.

Innovators and early adopters are likely to be able to learn the new technology with ease. Late majority and laggards may have difficulty learning the new technology and diffusion will be highest when people are properly trained on the technology. Learning can be formal, which is planned with certain goals to be achieved. Informal learning is spontaneous and based on experience and happens outside of formal learning. The most effective form of learning is using a combination of both formal and informal. Formal consists of structured training of the new technology. Informal is using the technology and having employees help each other understand the technology.

Many factors can hinder the learning process. It has been reported (Paunsson & Sundin, 2000) that people did not have enough time to study, to learn all the functions of the technology, and reflect on what they learned. The workload was too high to allow employees to spend time learning the technology and had to spend time outside of work. The technology in which the employees were learning suffered many technical problems, which hindered learning. Many employees experienced several interruptions from other employees and noise in the work place (Paunsson & Sundin, 2000).

For learning at work to be successful, there is a need for management to develop a plan of action. Clear and defined goals are needed for the employees to perform. There should be time set aside for people to work with the technology and understand its use and purpose. The training environment should be in an area that limits distraction. The employee's work day should be scheduled with time set aside to allow for them to spend on the learning and an opportunity to ask other people for help or clarification. Of the more important aspects of the learning; the management must make sure the technology is working properly and that they are providing feedback, which provides the employees with information that they are doing what is expected

and that they are on the right track (Paunsson & Sundin, 2000). The feedback may reflect the need for multiple training programs.

Training should consider all the categories in the diffusion of innovation model. Innovators and early adopters need less information on the reasons why the innovation is important and a shorter time span to learn the technology. This could be achieved using more formal learning rather than through informal learning. The most information about the technology and why it is important should be targeted toward the late majority and laggards. These two groups would be most effective with a balanced combination of formal and informal learning. These individuals require learning the technology and time to work with the technology with a mentor. The use of a mentor leads to fewer mistakes, because they could correct the user at the time of a problem (Hakulinen, Turunen, & Raiha, 2005; Huggins & Izushi, 2002).

The more comfortable people feel with a new technology and the more access to help in learning the technology, the easier and more quickly the new technology will be adopted by the individuals in the social system (Steijn & Tijdens, 2005). As people become more proficient at the computer programs in which they use, they increasingly have more positive appraisals of technology (Bugliarello, 2000; Rogers, 2001; Salanova & Schaufeli, 2000; Van Den Hoofe, 2005). Burnout is a negative outcome when people are over worked, frustrated, or unsure of their environment. High levels of exhaustion and cynicism and low levels of professional efficacy indicate burnout. The longer the employees worked with the technology, the less they experienced cynicism and demonstrate higher levels of self-confidence (Salanova & Schaufeli, 2000). Empirical research on burnout with technology has not been studied independently.

A salient area of implementing an innovation would be to watch other companies and competitors. This is good information on what is working and what is not working. Watching

competitors tells the decision makers what should be changed (van Riel, Lemmink, & Ouwersloot, 2004).

Formulation of the Problem

By improving the rate at which laggards accept an innovation, an organization will spend fewer resources in the training phase. More importantly, the individual learning the innovation will have a higher self-efficacy, which will improve their quality of life. Based on the review of the literature 12 questions have been developed to find ways to help organizations and trainees (for example, see *Table 2&3*).

Method

The goal is to explore the concept of laggards as they apply to the diffusion of innovation theory. These people learn slower than the rest of the population. The purpose of exploring this group of people is to find procedures that could be used to identify and help this group excel more quickly at tasks involving the adoption of technology.

A deductive research model (Keyton, 2007) was used to find the answers to the questions being asked. Once the research question was identified, an extensive literature review of diffusion of innovation and multiple communication disciplines were conducted. According to Krippendorff (2004), a study should be in such detail that another person would be able to reproduce it, which gives the study validity.

A list of 12 implementation and training questions were devised from the literature review and placed in a logical order to conduct the data collection (for example, see *Table 2&3*). The next step was to identify the population which would be used for data collection. This step was the crucial point in developing the demographic questions and defining whom would be

interviewed. This project was approved by the Institutional Review Board for research with human subjects at Saginaw Valley State University.

Participants

People with a minimum of a bachelor's degree and five years or more experience of training in innovations were sought for this study. Individuals with these qualifications provide excellent insight for they are in "the know". Ten individuals whose experience ranged from 8 to 20 years participated in qualitative research interviews. The educational ranges of the participants were: three Ph.D.'s, four master degrees, and three bachelor degrees, which had a total of 219 years collective experience. All participants were associated with either Education or Health Care, which both have large amounts of innovative change. The minimum requirement for participants were greatly surpassed and proved to provide excellent interviews and data collection to answer the research questions. Individual experience available from the author.

Interviews

The researcher visited local universities to find qualified individuals. Nine of the interviews were conducted by making appointments with interviewees where in the researcher explained the topic, purpose, and focus of the research. Interviews took place in the participant's office. The researcher read an orientation statement, which gave a brief over view of the topic. Interviewees then examined a list of the questions to assure them that they were not uncomfortable answering any or all of the questions. After reviewing these materials, interviewees read and signed a consent form indicating that they were willing to participate in the investigation. Interviews began with demographic questions, and then moved to the implementing and training questions. Implementing and training questions were set in three different groups: innovations the interviewee had invoked, how communication and training are

conducted at their institution, and how they identify and what strategies employed for motivating slow performers (laggards). Answers to the questions were recorded in a wire bound notebook. As each question was discussed the researcher paraphrased the responses back to the interviewee to ensure accuracy.

One interview was conducted by contacting a participant in a different state and participated by telephone. The participant orientation statement, interview guide, and the consent form were sent via e-mail. The participant returned an e-mail stating that he had received, reviewed, and accepted the information sent to him and that he agreed to participate. Upon receipt of this e-mail arrangements were made to conduct the interview over the telephone and the information was recorded in the same fashion as stated above.

Interviews took an average of one hour to complete. After each interview, notes were typed and sent to the respective participant in order to validate responses. “Validity is that quality of research results that leads us to accept them as true, as speaking about the real world of people, phenomena, events, experiences, and actions (Krippendorff, 2004, p.313). The range of time required to complete all interviews and receive notes back from the participants took approximately six weeks.

Content analysis

Content analysis (Krippendorff, 2004) was used after all the interviews were completed and participants validated notes; two researchers examined each question and identified themes that were common among the responses. Relevance sampling was used to gain meaning into research questions. “When using relevance sampling, analysts proceed by actually examining the text to be analyzed, even if only superficially, often in a multistage process” (Krippendorff, 2004, p.119).

Two researchers each took five of the interview responses and considered each question separately. The responses were then examined jointly and then compared to find common elements that were accruable to all disciplines. Many different themes were uncovered during examination of the interview notes. Differences were overcome by both researchers discussing how relevant each response was according to the how best to answer the research question. Themes were placed into categories, so a table could be developed (for example, see *Table 2&3*).

Grounded Theory

Grounded theory has many steps to lead the researcher in the correct direction for conducting a comprehensive project. The steps in a grounded theory are: data collection, note taking, coding, memoing, sorting (Dick, 2005). For this study data collection was in the form of interviews and note taking was conducted at the time of the interview and then were returned to the interviewee to review for accuracy. Coding and memoing are actions the researcher takes to keep notes for themselves as to how the interviews are being conducted. Sorting was conducted by two researchers examining responses to extract themes for the interview notes that were returned from the respective interviewees.

Results

Content analysis (Krippendorff, 2004) was conducted on all responses to all of the answers for each question. Of the ten interviews conducted, three discussed a new interlibrary loan system, four talked about new ways to implement and improve on-line learning, one discussed biometrics and security, and the final mindset was on public education and how innovations are implemented. Two tables can be viewed summarizing each of the 12 questions and their respective theme. Table 2: Types of Organizations and Innovations, covers the first

three questions. Table 3: Thematic Analysis of Implementing Innovations, covers the remaining questions.

The first question asked interviewees to describe some specific innovations and their role in implementing them in an organization. Answers were divided into four different types of innovations: card catalog system, implementing on-line learning, biometrics and security, and K-12 education.

Three of the interviewees discussed new innovations in the card cataloging at university libraries. The largest university has had the innovation of this new card cataloging system for the longest period of time. They were able to invest in the innovation when it was first available, because of the resources and the large number of users they were trying to accommodate. The next tier university has fewer resources, so they waited to see how the system worked. Waiting allowed them to ask questions of the larger university to avoid problems with implementation. The smaller of the universities were the last to come online with the innovation, because resources are more limited and the number of users is smaller than those at larger universities. It was important for the smaller university to be in contact with the larger universities to help with implementation and avoiding problems. The primary goal for implementing this innovation was to increase the amount and speed of information to be supplied to the end users.

Five of the ten interviewees discussed implementation of on-line learning. Using the Internet to supply and supplement learning has become an increasingly important aspect of all the university members interviewed. Many different functions were discussed from posting homework, group projects, communication ease, and conducting entire classes on-line. There are many different forms of on-line learning. Learning management software allows for a medium of communication between students and instructors, inside their own community. Many companies

are providing services to educational institutions, which reduce the workload for administrators so they can focus on other issues, and help facilitate learning to the student allowing the instructors to spend more one on one time with their students.

One participant discussed the advantages of security in a hospital. New federal requirements have imposed the adoption of many kinds of software to help tighten security. The innovations discussed included smart cards, which are used to have access to different areas and keeps a list of who enters and exits those areas. The new camera system has been added to the website, so a person can view live and recorded images from their home or office.

The last interviewee discussed the procedures for implementing innovations in a public school environment. The need for the innovation passes through many stages and people to insure that the resources are being used in the most effective way for the students. Innovations are carefully explored to avoid problems with the innovation or the implementation of the innovation.

The second question asked about the rationale for choosing the previously mentioned innovation. Content analysis uncovered three themes. The first theme is “primary users”, meaning the user of the product should be one of the first considerations. In essence, the reason for operations is to supply a product for the end user, and the innovation chosen should be useful to achieve that goal. The second theme “institutional cost savings” involves making the organization more profitable and reducing wasted resources. In sum, the cost of an innovation is a key decision that needs to be made, so that resources are used wisely. The third theme “Competition of like kind organizations”, refers to how different organizations view each other. Basically, competition allows for an organization to see what others are using and can be obtained at no cost.

Question three asked how the innovation has been helpful to your organization. Content analysis has identified two themes. The first theme is entitled “increased productivity”, which represents the increased amount of work being completed with the addition of the innovation. In sum, adopting innovations allows for more work to be completed in the same amount of time. The second theme is entitled “efficiency”, which refers to how work is conducted with the reduction of wasted resources. To summarize, innovations allows workers to perform activities efficiently with improved accuracy.

Question four asked if interviewees communicate with colleagues for advice on the innovation you have or will adopt. Content analysis has revealed two themes: “Internal and external”, Internal refers to the communication strategy of using colleagues and committees inside your organization. Basically, communicating with members of your organization helps focus on the needs of your organization. “External” is the communication strategy of using colleagues and committees outside of your organization. In brief, communicating with colleagues outside of your organization allows one to gain information on how innovations are working and which ones are best.

Question five asked how training was accomplished in their organization. Content analysis uncovered four themes. The first is entitled “training is a structured process”, which states that clear goals and guidelines must be in place. In essence, effective training needs to be presented in a logistical and meaningful format to have maximum effect. The second theme entitled “training is a system”, which uses workshops, seminars, and programs to supplement training, which provides different points of view for continuing training. To summarize, continued training is important to stay on the cutting edge of innovations. The third theme is use of “online support”, and was used to help give the trainees more materials to understand the

process. Basically, many options are now available for training departments to use support from outside sources. The fourth theme is to have “someone to oversee training”, which involves having someone accountable for the training being conducted. In short, there must be someone that is responsible for training, to ensure that the desired outcomes are met.

Question six asked how feedback is used in the training process. Content analysis exposed two themes. The first theme is entitled “formal feedback”, which is the use of evaluations to track training effectiveness. Essentially, using formal evaluations gives trainees useful information concerning their progress and areas that need improvement. The second theme is “informal feedback”, which is an open door policy. To summarize, informal feedback allows trainers to receive information at any time, and is used to improve the training process.

Question seven asked what their view of using time at work to train people on the use of an innovation. Content analysis discovered four themes. The first theme is entitled “training separate from productivity”, which represents having the ability to view training as an important aspect of productivity. Basically, properly trained individuals will perform more efficiently and avoid potentially costly mistakes. “Training employees is looked upon as down time” represents the second theme, which is training as part of someone’s job. In sum, training should be evaluated as job performance; successful training will show its advantages. The third theme “differences between educational and private arena”, shows how training is conducted in these two different arenas. In short, education arenas can easily see the benefits for proper training in the long term. Private arenas are more focused on how training will affect productivity, and are blinded to the potential resources used to resolve the issues of improper training. The fourth theme is “training compensation”, which refers to the issue of remuneration during training. In

sum, people in training will have a better attitude toward the training when it is viewed as part of their job.

Question eight asked interviewees to describe common communication strategies with respect to training and innovations (face to face, written instructions, etc.). Content analysis revealed three themes. The first theme is entitled “interactivity”, refers to the amount of technology used so trainees have better access to the training materials. To summarize, having training materials in multiple formats and availabilities allows for different perspectives to be provided during the training process. The second theme is “Responsiveness”, which represents the degree of questions being answered quickly. Basically, having the ability to answers questions quickly reduces down time and helps to avoid misinformation. The third theme is entitled “written instructions”, which is having materials available in hard copy and electronically to easily access information. Brief stated, written instructions provide the trainee with a clear path to follow for rules and procedures. The use of an abbreviated form of directions allows for the information to be shown quickly and accurately, to assist the trainee with redundant tasks.

Question nine asked about peer training. Content analysis produced six themes in two categories: three for advantages and three for disadvantages. The advantages are “non-threatening”, “quick answers”, and “generate trust”. These three advantages allow for trainees to go to co-workers for help, instead of the mentor for every detail. The disadvantages are “quality control”, “possible bad advice”, and “poor habits”. Members of an organization may learn short cuts and improper procedures, which may be adopted by a trainee. The increased workload requires the peers to focus on other issues than their own work.

Question ten asked about views on mentoring with respect to training in adapting innovations. Content analysis exposed three themes. The first is “informal mentoring”, which is used to keep the meetings comfortable. Providing an informal setting, allows for the trainee to feel comfortable with their superiors. The second theme is entitled “long term mentoring”, which is where a senior member of the organization is selected to meet with new members at regular intervals to discuss issues. Essentially, having an experienced member of the organization meeting with new members at regular intervals allows for helping generate trust and a more comfortable working environment. The third theme is “anticipatory mentoring”, which is the need to get people started. This is different from “long term mentoring” as the mentor and trainee only meet as issues arise. Basically, assigning a mentor from the start allows for less confusion for the trainee, as to whom they should contact.

Question eleven asked how slow performers are identified when implementing an innovation. Content analysis revealed three themes. The first theme is entitled “lacking confidence”, which refers to when the trainee’s self-efficacy is low. In essence, people when being confronted by difficult tasks, may be afraid or uncomfortable asking for help. “Repetition” represents the second theme, which is when a person will go over the same material multiple times. In brief, repetition is a problem because the trainee is not advancing in their learning and is wasting important organizational resources. The third theme is “assessment tool”, which allows trainers to monitor the progress of the trainee. Brief stated, administering periodical tests allows for the training team to see where the trainees are in the training program and allows for adjustments before proceeding to more difficult topics.

Finally, question twelve asked about strategies that interviewees employ to train slow performers. Content analysis revealed four themes. The first theme is entitled “one-on-one

instruction”, which is if an individual is requiring additional help with a certain area; this will help give them the extra boost they need. In sum, one-on-one instruction provides the trainee with answers to difficult questions as they arise. The Second theme is “different approaches”, which allows for people to have a different view of what is being taught. Basically, having the ability to show training procedures in a different way will help accelerate the time required for all employees to learn a new or changing process. “Pairing team members”, is the third theme, which allows for the strengths of a more experienced peer to help explain the process.

Essentially, training in teams allows people to bounce questions and solutions off each other to further the training being accomplished. The fourth theme is a “non-threatening environment”, which allows the trainee to feel welcome and not feel like a burden. Basically, this theme refers to providing an environment for people to ask questions and feel welcomed will raise their self-efficacy, which will allow for a quicker training process.

Conclusion

Results of the study offer several interesting and practical implications. As the interviewing process progressed it became evident how the different interviewees perceived training and how time should be spent on training. Although, there are differences between private organizations and the university setting, many of the approaches to training were similar. All agreed that training is an important function for smooth operations, but a mixture of the private organizations and university settings seems to be a most affective path to follow.

In all cases, the main reason for implementing an innovation was better service for the end users. The primary purpose of organizations is to consider how best to supply the desired products to the user and are the main reason for operating. Moreover, when considering innovations for an organization, end users should be a primary consideration for effective

service. Another consideration involves how speculation on the new innovation may affect resources. Cost implications are vastly important in supplying end users with the best service possible, while at the same time limiting the resources wasted (Kakabadse, Kakabadse, Kouzmin, 2005). Continued vigilance on how competitors are operating may give businesses and universities a unique ability to see problems others are facing so as to avoid costly mistakes. This section is organized by examining the themes revealed from the answers given in response to the questions on the interview guide, which can be viewed on Table 3: Thematic Analysis of Implementing Innovations. Afterwards, four methods are provided showing possible ways to identify laggards and how to overcome barriers to help them.

First, the size and amount of resources an organization has at its disposal is an important aspect to be considered. Larger organizations can afford to implement innovations as they become available, because they're in a position to take a loss if the innovation proves to be ineffective. Smaller organizations with limited resources need to be vigilant on how innovations are impacting larger organizations in order to avoid situations to protect their limited resources.

Second, the addition of innovations can lead to increased productivity, which allows for businesses and universities to spend more time and resources to ensure better products to the end users. Increased productivity leads to higher efficiency, which allows for products to be delivered to the end users at a smaller cost. Controlling the amount of resources being consumed allows for the business or university to continue supplying the quality that is expected from the end users.

Third, internal communication within an organization is extremely important for continued success. Having the ability to communicate effectively within an organization allows for information to be delivered to the correct contact in a timely fashion. A well planned medium

for internal communication in an organization allows for better service to the end users, by allowing the member of the organization to interact efficiently.

Fourth, external communication is also salient to the organization. Communicating with competitors and similar organizations allows for insight into any problems associated with an innovation. Sending members of an organization to conferences or similar events allows for colleagues to exchange and share information and view points concerning the latest innovations.

Fifth, training is a structured process and must be carefully planned to limit the amount of resources used to avoid waste. Planning out the training objectives before training begins, allows for a quicker and better-organized outcome. An outlined training process ensures that training is delivered in a logical manner. The bases for developing a training program should include a multitude of tactics. Using workshops and seminars provides different approaches for the same topic, which allows for better understanding at different levels. Sending members to training allows them to stay focused on the innovation and supplies the organization with additional resources to train other members more efficiently. The most recent innovation in the training field involves the use of online support. Having the ability to use information from the Internet for training helps greatly with the afore mentioned aspects of controlling resources. Internet supplements can be viewed from many different locations, which allow individuals to train at work, or potentially, from home. These training topics must have an individual that oversees and monitors the process to insure that training is being conducted at an efficient rate. The head of training has the responsibility for having materials available, scheduling training times, and ensuring that the training process operates flawlessly.

The sixth theme illustrates that training processes must have a medium for feedback in order to adapt to new or changing situations. Formal feedback uses written forms to evaluate the

training process, procedures, and how well information is being conveyed. Feedback for the trainee is especially important to provide them with information on their progress. Trainees that are not given feedback, positive or constructive, may become confused and develop a lower amount of self-efficacy. Formal feedback allows for training departments to target the needs of trainees, ensuring proper progress. Receiving feedback from end users is an excellent method to show where flaws exist in a training program. Therefore, obtaining information on how the product is viewed by the end users will improve training, which will improve the product to the end users. Informal feedback is communication between new and existing members of an organization. The idea of informal feedback is more useful than one may think. Communication between new and current organizational members allows trainees to learn the unwritten procedures and politics that every new addition must confront. Also, they learn at a faster rate due to the fact they can ask questions in a less threatening environment. Informal communication allows for building trust and raises a trainee's self-efficacy.

Seventh, training during working hours produced varied responses. Interviewees from private organizations viewed training as down time for both the trainee as well as for the trainer. Hence, having members of an organization involved in training diminishes that amount of productivity that should have been completed. Interviewees from universities viewed training as a part of their function. Training is so important that if a trainee is not properly trained, they will not be able to function in their position effectively. Improper training may lead to frustration on the part of the trainee and will hinder their productivity. Properly trained individuals will be able to perform required duties more efficiently, providing better service to the end users. It was perceived that trainees who are compensated for their efforts during training learn faster than if

they are required to train on their own time. Training should be considered part of a trainee's job and should be included in a training strategy.

Eighth, as interactivity has become a vital part of operating any organization, it is important to realize that training should be conducted using these means. Using interactive means for training frees up resources and allows for quicker responses to questions during the training process. Responsiveness is a crucial aspect to any training scenario. Giving trainees quick and correct feedback allows the training process to move forward with minimal down time. Having different forms of information such as cheat sheets, on line manuals, and hard copy manuals, allows for training to be continuous.

The ninth theme, peer training and mentoring, has been an important characteristic of training for many years. These types of training are very useful to the success of any training program. Peer training lets the trainee ask questions of a colleague rather than going to the supervisor for redundant questions. At the same time, there are some potential problems with peer training. New members of an organization may learn short cuts and/or receive bad advice. Providing short cuts is problematic, because training is not as effective as it is intended to be. Mentors are useful only when they are willing and a relationship must be formed. Mentoring that is considered a burden is not going to be effective and puts the training process at a disadvantage. A relationship must be formed and can be accomplished by meeting during regular intervals. Goals for the trainee must be established at each meeting and the mentor must follow up to ensure progress or the process is impeded. A trainee that has been assigned a mentor and does not profit from the experience is likely to feel that they were left out in the cold; and may leads to lower productivity and lower self-esteem. Using a combination of these formal and informal mentoring provides trainees with someone to approach when questions or assistance are needed.

Tenth, an individual or training department must be used and be accountable to ensure that training is conducted and follows a logical format. People overseeing training must have tools built into the program to identify slow performers. Having the ability to identify slow performers is extremely salient to keep training moving and in a positive direction. Using assessment tools in the form of entering exams, periodical tests, and exit exams shows where the individuals are in accordance to what has to be learned. These tests help to ensure that trainees are not overwhelmed, so information that has not been clear can be revisited before moving on to more complex topics. Also, monitoring how the trainees are conducting themselves provides clues as to how they are absorbing the information. Trainees that ask redundant questions and make the same errors repeatedly are indications that the trainee is having difficulty processing the information being delivered. Trainees that show a lack of confidence should be consulted, and a different delivery method should be employed. Failing to show interest or missing training sessions are signs that more one-on-one training be considered.

The results of this study identify four strategies for helping laggards improve in learning innovations. The first method is one-on-one instruction. Providing a new member with this type of training allows for the richest form of communication (Sheer & Chen, 2004). One-on-one instruction leads into the next three methods and most importantly forms a condition of trust on the part of the trainee as to whom they can rely. Pairing trainees with other team members is the second method to help laggards excel. Pairing members together allows for issues to be considered from multiple view points. This leads into the third method, different approaches. Utilizing a multitude of different views to discover ways to enhance learning is salient for any effective training program. Every person learns at a different rate and this must be considered to develop an efficient training program. The addition of internet sources and training materials was

perceived to be most useful in the training process. Having several different avenues to deliver information has helped immensely to show the same information in new ways. The last method involves creating a non-threatening environment. Trainees that feel comfortable in asking questions will learn at an accelerated rate. Feedback must be reinforcing; it is critical to avoid sarcasm and make the trainee feel they are a member of the team.

Further Research

During the literature search, the concept of having different training procedures for the different categories as presented by Rogers (1962, 1969, 2003) and Rogers & Shoemaker (1971) appears to be a better fit. Although this study focuses on perceptions of laggards, a training program tailored to these different categories would allow for more complete training and resolve or reduce many of the issues related to wasting resources. Three different categories of training seemed to be the best fit for this idea.

The first category would include the innovators and early adopters, since they would require less training due to the fact of their abilities to learn the desired procedures. To give this group extensive training would lead to excessive down time and possibly a feeling of wasting their time, especially in the case of non compensation for their efforts. The second category would include the early majority and late majority, because they would require more time to completely understand all the fascists of the innovation. The third category would be laggards, the premise for this study.

Future studies should examine methods for identifying and placing trainees into the proper category. It should also examine how prepared training departments are for dealing with different learning rates of new members to their organization. Assessment tools that were revealed to help identify laggards could be employed to determine which type of training new

members may require. Training departments that have predetermined goals in place will be able to test and assess which type of training is most desirable. Using exams to test trainee will show what area they need to concentrate and what area could be bypassed to decrease the amount of training. Conducting research into this idea may be fruitful for organizations to help control resources and provide better self-efficacy for the person being trained.

Trainees' perceptions could be evaluated to help find ways to improve the training program in organizations. Hence, allowing training departments with more feedback to evolve their training program. Moreover, developing ways to test the effectiveness of the above suggestions would shed light on how to more effectively help new members of the organization excel in their endeavors.

Appendix

Table 1: S- Curve and Bell Curve, indicating Diffusion of Innovation Categories.

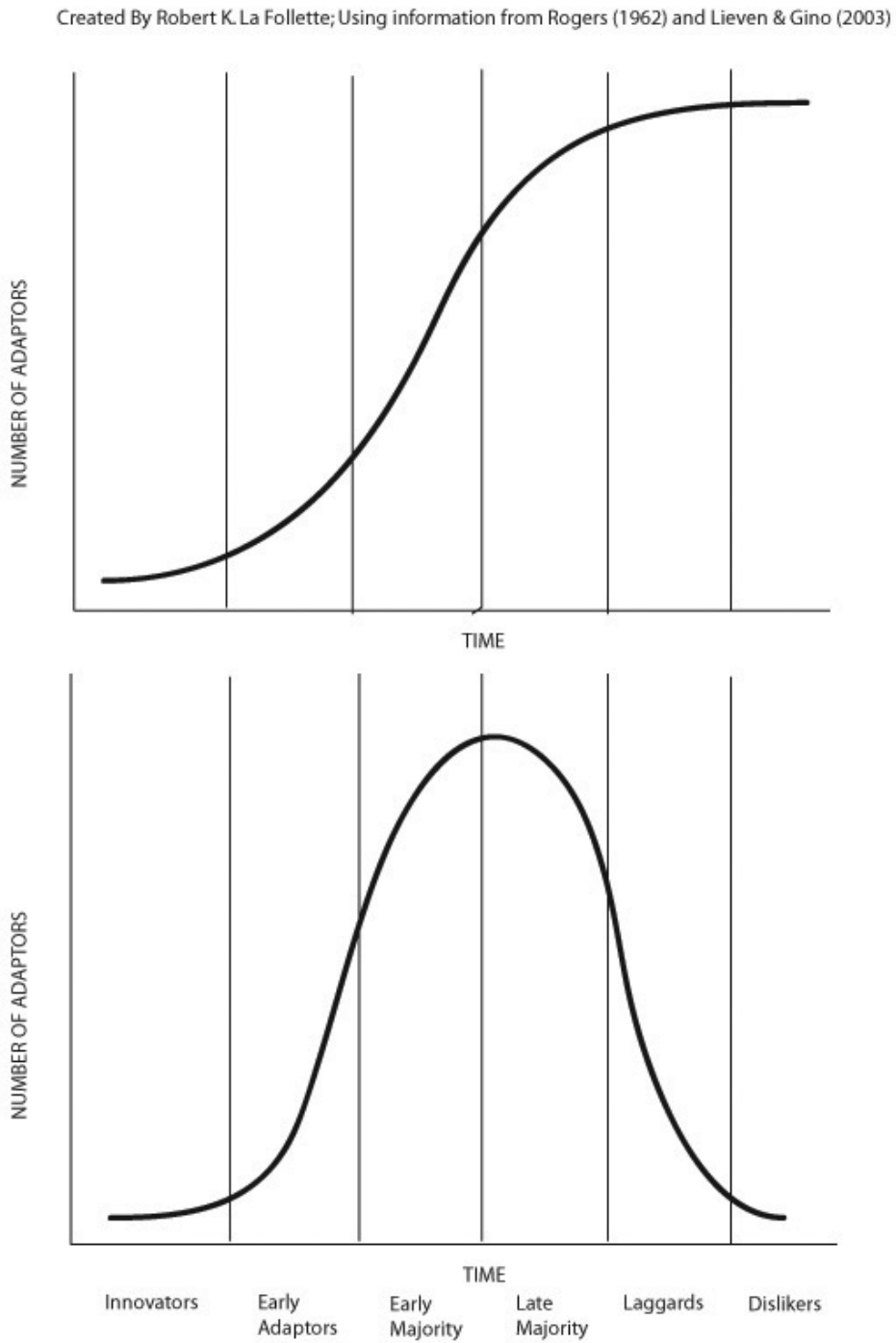


Table 2: Types of Organizations and Innovations

1. Describe some specific innovations and your role in implementing them to your organization?
 - Card cataloging system
 - Implementing on-line learning
 - Biometrics and security
 - K-12 education

2. What was your rationale for choosing the previously mentioned innovation?
 - Primary users
 - Cost saving to institution
 - Competition of like kind organizations

3. How has this innovation been helpful to your organization?
 - Increased productivity
 - Efficiency

Table 3: Thematic Analysis of Implementing Innovations

4. Do you communicate with colleagues for advice in the innovation you have or will adopt?
 - Internal communication- Communication channels inside an organization
 - External communication- Communication channels outside an organization
5. How is training accomplished in your organization?
 - Training is a structured process- planned format for implementing training
 - Training is a system- a combination of related parts organized into a complex whole
 - Online support- Using the Internet to improve training
 - Having someone to oversee training- Must have an individual or department accountable for training outcomes
6. How is feedback used in the training process?
 - Formal- Written documentation to evaluate training
 - Informal- advise from peers
7. What is your view of using time at work to train people on the use of an innovation?
 - Training separate from productivity- Having training considered as part of ones job
 - Training employees looked upon as down time- Time spent in training is viewed as unproductive
 - Differences between educational and private arenas- Different outlooks for how and why training is accomplished
 - Should trainees be compensated for training- receiving pay for training

8. Describe common communication strategies with respects to training and innovations.

- Interactivity- Having many different avenues to find information
- Responsiveness- The ability to have questions answered quickly
- Written instructions- Having information in multiply formats to accommodate training

9. What is your view of peer training?

- Advantages
 - Non threatening- enables trainees to ask questions of peers
 - Quick answers- Allows for immediate answers to questions
 - Generate trust- Supplies avenue for peer bounding
- Disadvantages
 - Quality control- Quality may suffer due to the in formalness of training
 - Possible bad advise- Wrong answers to questions
 - Poor habits- Learning of short cut

10. What is your view of mentoring with respect to training in adapting innovations?

- Informal mentoring- Used to create a comfortable environment
- Long term mentoring- Structured meeting with senior member of an organization to oversee a new trainee
- Anticipatory mentoring- A mentor is assigned and they only meet when issues arise

11. How do you identify slow performers when implementing an innovation?

- Lacking confidence- Trainees that are unsure of themselves
- Repetition- Repeating the same mistakes multiply times

- Assessment tools- Tests that are used to insure trainees are learning and has the ability to continue on with more difficult topics

12. What are some strategies that you employ to train slow performers?

- One-on-one instruction- Working directly with trainee
- Different approaches- Giving trainees different points of view for the same topic
- Pairing team members- Team trainee together to help them encourage each other
- Non threatening environment- The more comfortable a trainee feels the quicker they will excel in a training program

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