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Transforming social change through diffusion of innovation digital society in the era of technology 4.0

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Abstract

This paper elaborates special attention on the correlation of digitalization and the 4.0 technological era to the creation of new trends habits of behavior patterns in a modern digital society with new habits, within the scope of work and business strategies, Diffusion, Innovation, and, Adaptation in its application facing obstacles in almost all of the aspects of life and the field of work, such as education, health, economics, agriculture, in the field of finance, the social sector of society, and other fields, the obstacles include the rapid growth development of information and technology in Indonesia. Method of this paper use is qualitative research, using descriptive methods, with the study of literary studies, by looking also at previous research, explaining the elements of diffusion, innovation, and characteristics of Innovation. the explanation of each element of the subject of communication according to the existing communication paradigm, as a process, understood as a mechanism that runs from and to, across space and time from one point to another. which includes positivistic, consconstructivist Critical. The approach used in this study is the diffusion, innovation & adoption analysis of Rogers' innovations.

Keywords: Digitalization; Technological; Adaptation; Innovation

1. Introduction

The Diffusion Theory of Innovation and Adoption introduced by Mister Everett, widely known in the world as a form of study that elaborates the theory of Innovation Decisions, this is represented through work in the form of his book entitled Diffusion of Innovation, which was published in 1983, this book provides a presentation of the concept of Diffusion of Innovation and Adoption including the speed of a social system in absorbing new ideas or ideas that arise in accordance with the development of the technological era 4.0.

Within the scope of the development of Innovation, Diffusion & Adoption, there are three primary concepts elaborated by Mister Rogers in his theory, namely Innovation, Diffusion, and Adoption. Related to the three points of the Mister Rogers concept, it turns out that there is a strong relationship or correlation with the lack of synchronous development literacy and competence in the field of communication and public access to government, which is the cause of the community not being fully involved (Fitriyah, 2022).

2. Background of the Problem

Mister Rogers' theory of Diffusion, Innovation and Adoption in its implementation is not easy, but it faces many obstacles in all aspects of the field of life and the field of work that exist in society, for example in the field of educational work,

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the field of medicine in the scope of health, the socio-economic field, the field of agricultural agribusiness, the field of finance, the field of social affairs, and also in other fields.

The obstacle if you look further is targeting the field of information technology development and digital communication development in the era of technology 4.0 in Indonesia which currently continues to grow rapidly, although in fact Indonesia is a bit behind when compared to countries outside ASEAN, for example European countries, America and even China which have been intense in developing generation 5 technology towards the 6th generation, By preparing infrastructure in almost all provinces, where as we know that the data transfer speed of generation 5 and 6 technologies, the difference is not like a counting series but like an exponential series like a quantum leap.

The rapid development of technology in the theory of Diffusion, Innovation and Adoption is directed towards convergence, which is the delivery of inputs that are carried out in a well-integrated, coordinated, and simultaneous manner.

In addition to the technological constraints described in the paragraph above, there are also socio-cultural constraints, one of which is the constraints of customs whose nature is closed, where in a certain provincial area there is an inland ethnic community that still strongly maintains customs as a derivative of its ancestors, and does not accept the transformation of new habits which in social theory is called Acculturation which means The mixing of new cultures with local cultures or old culture slowly by not removing the original elements or elements in the local culture.

3. Problem Solution Framework

As a solution to the technological and socio-cultural constraints above, then in,

The practice requires effort

3.1. Community Awareness

Public Education by including Community Leaders, Religious Leaders or it can be influential people who have charisma in society, with the hope that the community can be more accepting. Community awareness needs to be carried out with methods that are appropriate and suitable for all circles in society, in this case the involvement of various stakeholder elements will be prone to conflict within the community, because when local governments do not manage conflicts quickly or the conflict drags on, public demonstrations tend to escalate into anarchism, (Muldi, 2019).

The rapid development of technology from various media channels, has considerable implications and impacts on the paradigm of community communication, as a form of a process, in a mechanism that applies across space, time from one starting point to another. which includes constructivistic, positivistic, and Critical elements.

The latest technological developments in the information sector have triggered major changes in digitalization technology in all content and media channels, including print media or mainstream media as well as electronic media.

4. Previous Research

Rogers' theory has until now been used as a reference for social science researchers, specifically in the discussion of the Theory of Diffusion, Innovation and Adoption, In the historical record of his research, Rogers elaborated as many as nearly 4,000 scientific publications, specializing in the focus of discussion of Diffusion, Innovation and Adoption to carry out updates or novelties of the pre-existing Diffusion, Innovation and Adoption Decision Process.

5. Results

From the results of Mister Rogers' research, it can be concluded that socio-cultural influences, business expectations, achievement expectations and facility conditions have an influence and are very closely correlated with the Sustainable Technology Adoption plan, this is a fairly massive increase in Diffusion, Innovation and Adoption research at that time.

Furthermore, from the variety Previous research shows the Characteristics of Diffusion, Innovation and Rogers Adoption greatly influences consumers who want to adopt innovative product products.

6. Theoretical Foundations

Innovation is the thinking, practice and practice of goods assuming to be new by a person, furthermore elements of diffusion, innovation and Adoption are the most common ways to convey a development through the transfer of correspondence on a particular occasion to individuals within the socio-cultural order.

Diffusion, Innovation and Adoption can become a reality when individuals implement it through a comprehensive practice that is Rogers' most optimal choice,(1983).

In this study, Adoption, Diffusion, and also Innovation, which will be projected to the optimal Adoption, are offered that can reduce potential vulnerabilities, related to development, in order to connect the level of public acceptance to new commodities.

Diffusion, Adoption and Innovation Characteristic Factors can intervene in individual thinking within the social system, related to the level of adoption or the non-absolute speed of an innovation adopted by society within the socio-cultural system.

There are five characteristics of Diffusion, Innovation and Adoption offered by Rogers, in the picture below:



Figure 1 5 Perceived Attributes the Diffusion of Innovations, Everett M. Rogers

First, relative advantage, namely the degree or degree of an innovation is interpreted better than the idea of the previous innovation.

Second, conformity, which is the level of an innovation, is interpreted similarly to previously existing values, past experiences, and also in accordance with the needs of influential communities as adopters.

Third, Complexity is the level of innovation that is interpreted to be difficult to understand or utilize in community activities.

Fourth, The trial or level of an innovation can be tried in a narrow community.

Fifth, Visibility is the level at which an innovation can be identified and clearly visible to others around it.

From one to five characteristics of Diffusion, Adoption and innovation in the context of Diffusion decisions, Adoption and innovation will always remain in the persuasive phase that becomes so important its contribution in the decision-making of a Diffusion, Innovation and Adoption., in its application with normal complexity, it will be able to be experimented, observed, then the innovation will be immediately adopted by individuals or communities in the socio-cultural system.

7. Bibliography review

The definition of Diffusion, Innovation and Adoption is defined as diffusion as a cycle in which a development is conveyed through a certain channel of time within a certain period of time, in individuals from a social framework, then Diffusion and Adoption Innovation can also be perceived as a type of phenomenon Social change towards the direction of progress and novelty.

Development is a thought, practice, or element that is perceived as Novelty by individuals as well as social groups, this means that Diffusion, Innovation and Adoption is a process of propagating the retention of new thoughts or things with the ultimate goal of changing the general public that occurs continuously, starting from one place to the next, starting with one time, then to the next, starting with one particular field then to the next, to the individual, to another group of individuals in the social system group.

8. Elements of Innovations Diffusion

According to Rogers, the Diffusion, Innovation and Adoption process has four main elements, namely: an innovation, communicated through a specific communication channel, within a certain period of time.

What are the elements of Diffusion of Innovation and Adoption in social systems, here is the explanation:

- Introduction, at the time when the idea was first introduced, there were no obstacles to adoption and consumers had not yet formed their opinion about the product or service.
 - Diffusion at this stage is characterized by consumers trying products or services without pressure from other members of society or any external factors such as government intervention or social norms. But if communication is intended to change the attitude or behavior of the recipient personally, then the most appropriate communication channel is interpersonal communication, which has the characteristics of its informal atmosphere, there is two-way communication both verbally and non-verbally.
 - Diffusion with benefits, In this stage, some aspect of innovation has been adopted by a large part of society and it has become easier for others to adopt because they see that others are already using it and that offers them the benefits they seek before they start adopting it themselves.
 - Diffusion at cost, At this stage, some aspects of innovation have been adopted by most of society but there are still many barriers to adoption that make it difficult for those who have not yet adopted because they do not know if they will be able to reap the benefits without spending the costs directly.
 - Innovation is a new thought, behavior, thing, data and practice that is not yet commonly known, recognized and used or applied, and implemented by most individuals in a particular field, which can be utilized to empower change in all perspectives.
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9. How does the Innovation Adoption Process occur to consumers?

Consumer adoption is the process by which consumers change their purchasing and usage patterns in response to a new product or service. To answer this question, we need to understand what consumer adoption is and then what are the steps involved in it. Simply put: Consumer adoption is when a company launches a new product or service as an alternative to an existing product and people start using it as soon as it launches.

The 5 stages of the adoption process are the Awareness Stage, Interest Stage, Evaluation Stage, Trial Stage, and Adoption Stage, the following will be explained one by one from the five stages of the process as follows:

9.1. Stage of Consciousness

In this Stage the first step in the consumer adoption process. It refers to the period when a potential customer knows your product or service and begins to consider its purchase. By the time he realizes your product, the customer.

The uninvolved is more likely to become interested and buy vs. someone already involved in the buying process. Some of the factors that contribute to this stage of consciousness are: The level of awareness your company has about your product/service, which can be achieved through advertisements, social media posts, press releases, and other devices

How famous your company is in the market.

The type of positioning you have for your brand/product/service – whether it's positioned as an "always-on" brand or a more lifestyle-oriented one.

During this stage, marketers focus on getting the attention of their target audience through advertising and marketing activities such as television advertising, radio venues, newspaper advertisements, billboards, email, the Internet.

One of the most effective ways to reach consumers at this stage is through influencers who already know the product or service. These people can talk about your brand on social media channels like Twitter, Instagram, Facebook, TikTok and others, this will make their followers interested in your brand.

9.2. Interest Stage

At the Interest stage, consumers are looking for information about new products. But how did they do it? To answer this question, we need to understand the different channels through which people are looking for information about new products. They can be:

Directly ask the company or their representative for more information. Search for product reviews and ratings online.

Using social media channels like Facebook and Twitter to find out more about it. Search the Android, IOS, Yahoo, Bing, Google, or MOSKI applied apps, which they know from viewing Web content or recommendations from friends & colleagues in their office or neighborhood. Through channels that mention your product or service, consumers can engage with it. For example, if they search for "Honda motorcycles", users can find out about you by looking at results like "Review of the latest Honda CB150 X closer to my budget".

9.3. Evaluation Stage

At the evaluation stage of the purchasing process, consumers are looking for products that meet their needs and fit their budget. Before buying a product, they will look at the different options available in the market to compare prices and features. They will also check reviews on social media or websites to get an idea of what others think about it.

Consumers will consider their budget, needs, wants, and how much they are willing to spend before deciding whether or not they want to buy a product. For example, if you sell your old bike that is different from your competitors. Your social media posts can include the following: "Thinking of buying a Honda Scoopy Fashion?" that will have people talking to their friends and asking for tips on whether or not they should buy it.

9.4. Trial Phase

This is the phase in which consumers use the product for a certain period of time to ascertain, whether it will provide satisfaction to their needs. This is when they decide whether they will buy it or not. They can use the product for several days, weeks, months, or years depending on how long they need to try out the different features and functions of your product. Once people have used your product for a period of time, they are more likely to buy it because they know what to expect from it and that there are no hidden surprises waiting for them at this stage.

Marketers can drive changes in consumer behavior by offering product samples for free. To understand the importance of this stage, let's consider a few important points :

- The majority of products sold today were first introduced as trials before they became mainstream.
- This makes it an option for companies to gain insight into what features and benefits consumers find most appealing.
- The more trials a company has, the more data they have about how customers actually use their products and what they like or dislike about them.

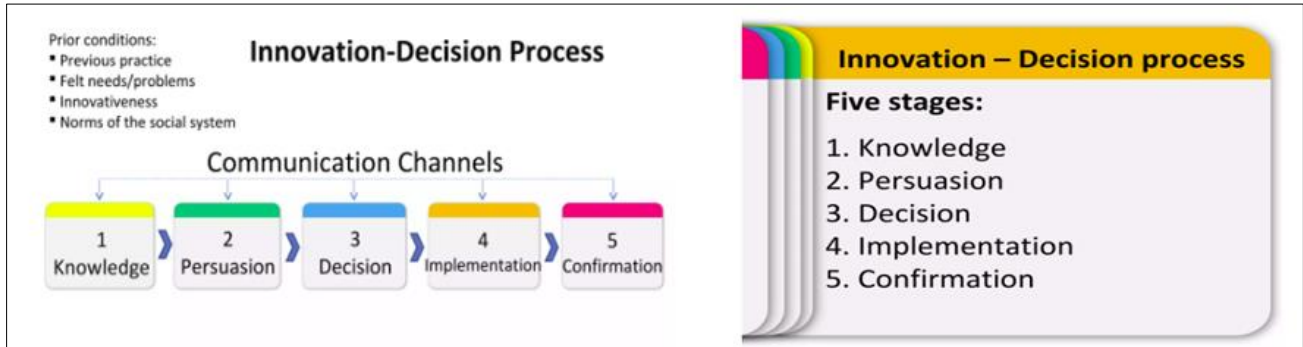
9.5. Adoption Stage

To understand the importance of the adoption stage, let's first understand what consumer adoption is. Consumer adoption is defined as "the process by which people change their behavior in response to changing external conditions." Products that have reached the final phase of their life cycle are products that have purchased by consumers. This means that it is used by them for whatever purpose they have purchased it, whether it is personal use or business use.

It also determines how much they are willing to pay for your products, which can lead to further revenue opportunities if you sell products through different channels such as online stores and physical stores. In order for a product to remain

relevant and continue to be in the "used by" category, it must continue to be used. The longer a product is used but not bought or sold can cause brand interest to wane in a particular market/industry without anyone making the same purchase of the same item.

The following will be visually drawn graphically for the decision-making process Diffusion, Adoption and innovation as follow



Source : Researchgate: Model-of-Five-Stages-in-the-Innovation-Decision-Process.

Figure 2 Innovation-Decision Process

Rogers said that communication plays a very important role in the life of social change, to explain this, there are three sequential stages, namely:

9.5.1. Knowledge

This happens when an individual (or other decision unit) is exposed to the existence of innovation and gains an understanding of how it functions. Innovation can lead to needs as well as vice versa. Innovation occurs because of the need as in the innovation of fossil fuel motorcycles to Battery-powered motorbikes.

This happens when individuals (other decision-making units) form a favorable or unfavorable attitude towards innovation.

9.5.2. Persuasion

In developing a favorable and unfavorable attitude towards innovation, the individual can mentally apply new ideas to the present or anticipated future situation before deciding. It's a kind of representative court. The main result of this stage is favorable or unfavorable to innovation.

9.5.3. Decision

Decisions occur when individuals (other decision-making) engage in activities that lead to the choice to adopt or reject innovations.

Adoption is the decision to take full advantage of innovation as the best course of action available.

Most individuals will not adopt any innovation without first trying it out on the basis of a trial period to determine its usefulness in their own situation. If the innovation has at least a certain degree of relative advantage, then individuals will move to adoption decisions. Rejection is the decision not to adopt innovations.

9.5.4. Implementation

Implementation occurs when individuals (or other decision-making units) use innovations. At this stage, implementation involves an open change in behavior, since new ideas are actually put into practice. The point is achieved when a new idea becomes institutionalized or organized from an adopter's ongoing operation.

Adoption means proper copying or imitation of how innovations have been used before in different settings. Sometimes the adopted innovation is modified or changed by the user in the process of implementing its adoption. It's called reinvention and it happens for certain innovations and for certain adopters. As a result of reinvention, an innovation

may be more precise in matching pre-existing system issues and more responsive to new issues that arise during the innovation decision process.

9.5.5. Confirmation

Confirmation occurs when individuals seek reinforcement for innovation decisions already made. At the confirmation stage, the individual tries to avoid a state of dissonance or discomfort due to the conflict of behaviors, attitudes, or thoughts and provides motivation or encouragement to reduce the discomfort that occurs.

10. Research methods

In this manuscript, the author uses a qualitative descriptive method, with a literature study approach. Research is a mandatory task for undergraduates, post-graduates, and doctoral programs of Strata1, then Strata2, and finally Strata3, to complete lecture assignments at various universities in Indonesia, several approaches in research methodology are used by researchers who focus on Qualitative research, (Yusanto, 2019).

This research uses a literature study approach with the aim of revealing a variety of theories that are relevant to the study chosen for research.

The technique uses how to select literate material, read it, study and elaborate various relevant literature, which emphasizes more on interpretive studies. As Creswell (1998), explaining that qualitative research is a process of inquiry of understanding that is based on different methodological tracing habits and can carry out social exploration in society. by establishing complex and holistic visualizations, analyzing phrases, reporting detailed views of informants, and carrying out studies in the usual atmosphere.

11. Conclusion

Based on the research that the author has obtained, it can be implied that, individuals can identify an innovation and new things or novelties can be accepted, even though in its application it experiences various obstacles. or not accepted by certain individuals or socio-cultural groups.

This can be something that is important to pay attention to if we want to try new things and try to influence individuals or groups.

One of the benefits of Diffusion, innovation and adoption is that it can provide solutions to problems or difficulties found in people's daily lives at home or in the office.

Novelty will replace the old things that are felt to be full of problems.

The existence of new ideas or ideas can make almost all existing problems can be found the best solution more effectively and efficiently.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors of this study consist of similar scholars with the same backgrounds and who reside in a similar educational institution, the Faculty of Social & Political Sciences of the University of Sultan Ageng Tirtayasa.

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