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## Theoretical Study: The Diffusion of “Piknet” Innovation Sound Wave Attractor In Bulak District, Surabaya

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**Abstract.** Diffusion of innovation is a process which needed in an effort to adapt to an idea or technology so that a person or group of people can adopt a new subject through the stages set. The purpose of this research is to hope that the process of accepting the attractor based on the "Piknet" sound wave as an innovation can be studied based on the diffusion theory of innovation from Rogers. The method used in this research is a literature review which was carried out for 2 (two) months, in June and July 2021. The object of the writing is to deepen Rogers' theory of the diffusion of innovations that can be used as a basis for determining the stages of the wave-based attractor diffusion process. the sound of "Piknet" to groups of fishing fishermen in *Bulak* District, Surabaya. Rogers' innovation diffusion theory can be used as the basis for the diffusion process of "Piknet" sound wave-based attractor innovation in *Bulak* District, Surabaya, using elements and stages of the decision process that are adapted to the conditions of the local community.

**Keywords.** Attractor, diffusion, innovation, piknet

### Introduction

Diffusion of innovation is a process which needed in an effort to adapt to an idea or technology so that a person or group of people can adopt a new subject through the stages set. The "Piknet" sound wave-based attractor is one of the innovations that requires a diffusion process so that fishing communities in *Bulak* District, Surabaya can adopt new things related to the function of the tool as a fish lure to get closer to a fishing gear used. *Piknet* diffusion process cannot be separated from the elements related to the environment, such as biotic, abiotic and social/cultural. The theory or perspective of egocentrism emphasizes that there is a link between all biotic and abiotic components in an ecosystem, where humans have the same position as these components, have different functions or roles but are one unit. In this study the sound wave-based attractor "Pkinet" is a tool that is interpreted as an abiotic element, fishermen are interpreted as a biotic element and how to carry out fishing operations is interpreted as a social/cultural element, where the behavior of fishermen in the process of diffusion of innovations related to the use of fishing aids and methods of fishing. fishing operations will change with the use of the “Piknet” sound wave-based attractor innovation.

The environment is a unitary space with all objects and the unity of creatures including humans in it (Soemarwoto, 2004). The relationship between one person and another in a certain area, both directly or indirectly, is very important in the success of the innovation diffusion process. The purpose of this research is to hope that the process of accepting the attractor based on the "Piknet" sound wave as an innovation can be studied based on the diffusion theory of innovation from Rogers.

Rogers, (2003) explained that in the process of accepting an innovation, usually someone goes through the stages of the innovation decision process. The innovation decision process is a mental process by which a person or institution goes from initial knowledge about an innovation to forming an attitude towards the innovation, implementing the new idea, and confirming the decision.

### **Methods**

The method used in this research is a literature review which was carried out for 2 (two) months, in June and July 2021. The object of the writing is to deepen Rogers' theory of the diffusion of innovations that can be used as a basis for determining the stages of the wave-based attractor diffusion process. the sound of "Piknet" to groups of fishermen in *Bulak* District, Surabaya.

### **Result and Discussion**

#### **A. Rogers' Theory of Diffusion of Innovations**

*The grand theory* which used in discussing the process of adopting a sound wave-based attractor "Piknet" is the Innovation Diffusion Theory proposed by Everett M Rogers as outlined in the book "*Diffusion of Innovation (DOI)*" "*an innovation is an idea, practice, or object that is perceived as new. by individual or other unit of adopter*", which was first published in 1983, is known as a theory that discusses innovation decisions. This theory explains the concept of innovation diffusion which is related to the speed of an innovation so that it can be accepted by the social system (Rogers, 2003). Rogers stated that the main goal of the innovation diffusion process is the acceptance of an innovation in the form of ideas, science and technology both by individuals and certain social groups. Rogers (2003) states that the element of innovation consists of 4 (four) parts; characteristics of innovation, communication channels, time period and social system. The characteristics of innovation according to Rogers's (2003) theory consist of 5 (five) aspects, which are: relative advantage, suitability, complexity, testable and observable. While the stages for someone to adopt an idea or technology that is relatively new is with awareness, desire, evaluation, trying and finally adopting.

#### **B. Diffusion of Innovation in Fisheries**

Fishery is an aspect related to resource utilization, aquaculture, fishery product processing and socio-economics which as a whole will require innovation in accordance with the needs of community groups working in the field of fisheries. Some researchers such as Wejnert, B., (2002) integrate several variables in diffusion research to explain their influence on the decision of actors to adopt an innovation. Blythe, J., et.al, (2017) using the theory of diffusion of innovations focuses on three factors that influence the spread of small-scale tilapia aquaculture in rural areas which consist of: socio-economic characteristics of the adopter, the role of officials and leaders in an area and characteristics innovation. This study also uses the theory of diffusion of innovation proposed by Rogers E, M which is characterized by 5 (five) characteristics of innovation as an analytical tool. Wisdom, J. P., et.al, (2014) in his publication explains that the innovation adoption process is a process that starts from before adoption until

someone realizes an innovation so that they are able to make a decision to adopt. Hamzah, A., et.al, (2008) explained the response of fishermen groups to the modernization of fishing technology for fishermen from the *Bajo* tribe of Southeast Sulawesi so that they can be adopted and have an impact on various aspects of life. Septiani, T. and Esfandari, D.A., (2018) explained that innovation may not succeed in solving problems in the fisheries sector due to human resources who are difficult to accept new things. Innovation in the fisheries sector should be through direct guidance in the field in the process of implementing innovation and coupled with efforts to improve the quality of its human resources. Hanan, A., (2017) said that the speed of implementing innovation is largely determined by the type of innovation itself and the characteristics of the person who diffuses the innovation related to technical competence, credibility, attractiveness and high empathy.

### C. Diffusion of “Piknet” Sound Wave-Based Attractor Innovation

The sound wave-based attractor innovation from research from Rosana, N. and Rifandi, S., (2018) describes the testing of a sound wave-based fish calling device called *Piknet*. The experiment was carried out to see the fish's response to the sound coming out of the tool. N Rosana and Muminin A, (2019) explained about the difference in the number of catches of “*Bulu Ayam*” fish (*Oxyporhamphus Micropterus*) using a sound wave-based attractor compared to not using a tool. N Rosana, MA Sofijanto, Suryadhi, (2019) explained about efforts to introduce sound wave-based attractors to fishermen in *Bulak* District, Surabaya.

Conceptually, Rogers' innovation diffusion theory can be applied to the innovation diffusion process which will be applied to the “*Piknet*” sound wave-based attractor in fishing groups in *Bulak* District, Surabaya by using the elements and stages of the innovation decision process which can be seen in Figure 1.

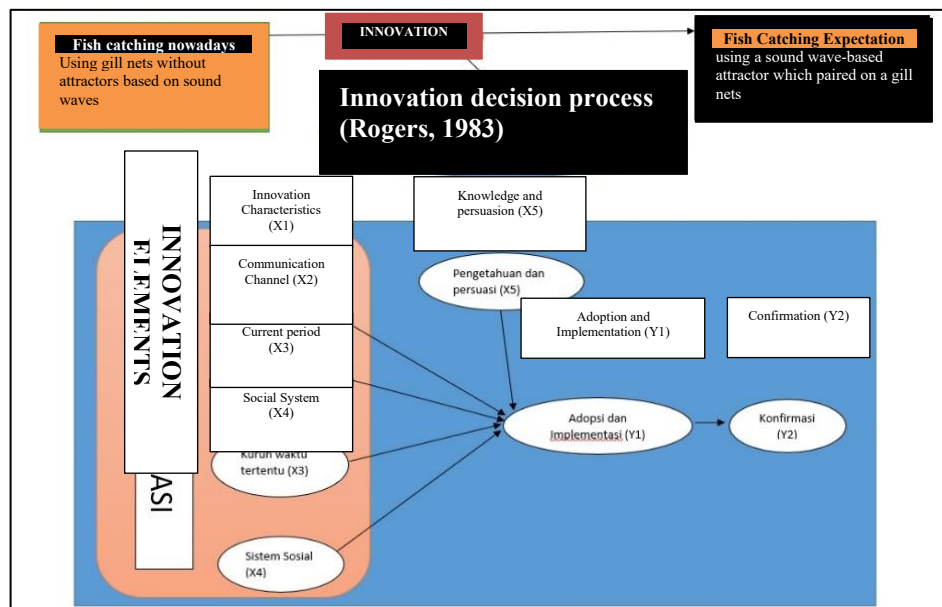


Figure 1. Conceptual framework for the diffusion of attractor innovation based on “*Piknet*” sound waves to fishermen groups in *Bulak* District, Surabaya

The conceptual framework for the diffusion of attractor innovations based on the sound wave “*Piknet*” in fishermen groups in *Bulak* District, Surabaya adopts Rogers' innovation diffusion theory, it can be explained that in the current conditions where fishing carried out by

gill net fishermen in *Bulak* District, Surabaya has not used fishing aids. attractors so that there needs to be an innovation that can be accepted and applied so that in the future fishing operations using sound wave-based attractors are expected to increase effectiveness and welfare. The innovation decision process uses the elements of innovation, such as: characteristics of tools, communication channels, a certain period of time and social systems. While the stages of the innovation decision process the factors used are: knowledge and persuasion, adoption and implementation and confirmation.

### **Conclusion**

Rogers' theory of diffusion of innovation can be used as the basis for the diffusion process of "*Piknet*" sound wave-based attractor innovation in *Bulak* District, Surabaya, using elements and stages of the decision process that are adapted to the conditions of the local community.

### **Suggestion**

Conducting research related to the diffusion process of attractor innovation based on the sound wave "*Piknet*" with more complex variables.

### **Acknowledgement**

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