

Communication Channel Role in Micro-hydro Innovation Communication

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ABSTRAK

Penelitian ini ditujukan untuk menelaah peran saluran komunikasi dalam aktivitas komunikasi pengadopsian inovasi mikrohidro. Pengumpulan data dilakukan dengan menggunakan kuesioner dalam prinsip sensus terhadap 99 orang kepala keluarga para pengadopsi inovasi. Hasil menunjukkan bahwa mayoritas para pengadopsi listrik mikrohidro di Desa Kedungrong, Blumbang, dan Jarakan mengamati perkembangan positifnya terlebih dahulu sebelum mereka pada akhirnya mengadopsinya. Mayoritas mereka mengadopsi listrik mikrohidro pada 3 tahun pertama sejak instalasi mikrohidro lokal di pedukuhan masing-masing selesai dibangun. Beberapa kepala keluarga pengadopsi lainnya kemudian menyusul untuk mengadopsinya pada 4-6 tahun pertama sejak instalasi mikrohidro lokal di Pedukuhan masing-masing selesai dibangun, lalu sebagian kecil mereka mulai mengadopsinya pada 7-10 tahun pertama sejak instalasi mikrohidro lokal di pedukuhan masing-masing selesai dibangun. Mayoritas para responden hanya menggunakan telepon seluler sebagai saluran komunikasi dengan aplikasi WhatsApp guna berkomunikasi antara satu dengan lainnya.

Kata kunci: Saluran Komunikasi, Mikrohidro, Pengadopsi, Telepon Seluler, WhatsApp

ABSTRACT

This research was aimed to study the role of local innovator in communication activities of micro-hydro innovation adoption. Data was collected by using questionnaires in census principle to 99 household heads of the innovation adopter. The result showed that majority of the microhydro electricity adopters in Kedungrong, Blumbang, and Jarakan Villages were observing first the positive development before they finally adopted it. Majority of them adopted micro-hydro electricity at first 3 years since the local micro-hydro installations were built completely in their respective villages. Few other adopter family heads then followed adopting micro-hydro electricity at 4-6 years since the local micro-hydro installations were built completely in their respective villages. Eventually fewer other adopter family heads then followed adopting micro-hydro electricity at 7-10 years since the local micro-hydro installations were built completely in their respective villages. Majority of the respondents only used cellphone as communication channel with WhatsApp application in it to communicate between one and another

Keyword: Communication Channel, Micro-Hydro, Adopters, Cellphone, WhatsApp

PENDAHULUAN

Established communication study had intertwining relation with occurring innovation in science and technology study. Both sectors had also formidable implication with development communication and the development itself firmly. The consequence was both sectors had their own discipline standard too. Technology development such as nanotechnology, biotechnology, and renewable energy technology was the technology which could be certain that would interact and collide with social change. This interaction became an important process in technology combination with society through communication. Other important process was knowledge sharing process in the context of social wellbeing and development. These process made communication role in innovation became a central theme (Servaes, 2020). The combination between communication sector and technology was also developing in renewable energy technology sector.

Renewable energy had become world main attention recently. United Nations designed the Sustainable Development Goals to cope with the issue of

environment more effectively. One of the important Sustainable Development Goals was the number seven about affordable and clean energy. Many nations had translated this number seven goal by massively utilized renewable energy technology such as solar panel electricity generator, wind energy electricity generator, geothermal electricity generator, and hydro-turbine electricity generator. The hydro-turbine electricity generator took form of large reservoir dam and even house water channel utilization as pico-hydro electricity source. Renewable energy technology used low carbon emission which was generated from its technical instrument operation as guidance. The fulfilment of low carbon emission production was the category of environment friendly status.

(Warjito et al, 2018) stated that Indonesia had aspiration about low carbon energy transition that was delivered in decentralization process. The decentralization process took advantage from environment-based government scale redesign dynamic. The low carbon energy transition also covered the abundance of potential Indonesia water energy to be utilized as electricity

generator power like micro-hydro. (Sato et al, 2017) explored that Indonesia was one of the most proactive nation in promotion endeavor of micro-hydro as rural electricity base. Government with non-governmental organization such as Bandung Hydro Association had been supporting rural electricity and community development with hundreds of micro-hydro projects. The micro-hydro power was the most important renewable energy technology consideration for rural electricity in developing countries. Its main distribution was prioritized to be developed in rural areas. One necessity which was needed to be improved was projects performance documentation. Its improvement was crucial to keep proper balance of micro-hydro power installations. Few studies were constantly delivered to evaluate the sustainability of micro-hydro power electricity generator in rural electricity matter.

Renewable energy system could create more job investment than conventional energy supply. One thing that became its liability was its doubtful longterm sustainability. Implemented renewable energy programs so far had low longterm sustainability success rate. The already applied programs failed frequently in order to observe their target society's social and cultural issues properly. This thing contributed impact to the low acceptance by the society or even rejection from its user (Sato et al, 2017). The well-accepted hydropower program by rural society could be empowered with proper communication approach that suitable with the needs. This acceptance led the way for society service messages acceptance, so the community empowerment dedication could be well-functioned.

The experts widely discussed the role of development communication. They generally agreed that communication had important role to be conducted in development (Naldo & Satria, 2020). Development simply was a useful change toward an economy and social system as will of a nation decision, with communication as the basic of social change. Communication role in development would be more productive if it was connected to change direction that encouraged the actuating communication activities would be able to anticipate movement or development (Rogers, 2003). The interesting thing which was suitable with this research was how far the society acceptance and their local innovators role in accelerating adoption rate of micro-hydro power electricity.

This research was trying to study the role of local innovator in communication activities of micro-hydro innovation adoption in Kedungrong, Blumbang, and Jarakan Villages. It was the reason why this research aimed to analyze the innovation adoption rate of micro-hydro technology users in Kedungrong, Blumbang, and Jarakan Villages. This approach sets the innovation adoption rate theory into new perspective to analyze the real usage of an innovation.

Hydropower played important role as global energy system toward progress with minimal carbon emission and sustainable future, as was promoted under the Sustainable Development Goals. (Zhang et al, 2018) showed research that became one of systematic analysis

for impacts of policies, climate change, and water-energy-food nexus. This systematic analysis put focus on hydro power development in global scale. Zones of Asia, Africa, and Latin America were actual sources for hydro power development promotion with capacity expansion. Other zones which were Europe and Northern America kept focus on performance improvement and environment impact mitigation. This development focus division emphasized urgent impact which could not be avoided from climate change. The climate change was projected would increase the gross hydropower potential (GHP) on high latitude of North Zone of Earth and Tropical Africa. It was also projected to decrease GHP on Zones of United States of America, South Africa, and Southern also Middle Part of Europe. Nexus of water-energy-food analysis emphasized the importance of integrated approach that relevant with inter-sectoral coordination. It led to resources utilization efficiency improvement and achieved sustainable hydro-power development. The three factors together simultaneously shaped hydro-power future. This influence made it necessarily to be considered in operational dedication and planning (Zhang et al, 2018).

(Hatata et al, 2019) classified the hydro-power installation system into several types. The first type was large scale hydro-power installation with capacity over 100 MW. The second type was medium scale hydro-power installation with capacity among 10-100 MW. The third type was small scale hydro-power installation with capacity less than 10 MW. The fourth type was mini-hydro installation with capacity 100-1000 kW. The fifth type was micro-hydro installation with capacity 5-100 kW. The sixth type was pico-hydro installation with capacity less than 5 kW. The small scale hydro-power installation was considered as the best method to generate renewable energy. This method was designed for flowing current type river. Its design required low unit head and energy to push the hydro turbine into motion.

(Davis, 2003) reported that micro-hydro utilized the same turbine types with the types that was utilized in larger scale installation system. Micro-hydro practices increase was not directed by turbine design innovations. The increase was more directed by improvements of two balanced system components which were AC system electronic content controller and battery filling system inverter. (Davis, 2003) added that even micro-hydro was a reliable technology and well-applied, the technology itself had its defect and also advantage. The advantage was that micro-hydro could provide best enforcer power for each turbine rotation in one installation site. This advantage was considered by perspective of electricity service provision and renewable energy. The significant power of it could be generated by two gallons of water flow per minute, or falling water from two foot high. The significant electricity power of it could also be generated by an action with effective cost, and in one mile or more of its distance from where the electricity was generated to where the electricity was utilized.

(Erinofiardi, 2017) stated that hydro energy at mini-hydro or micro-hydro had received highest attention in environment friendly operation among other existing renewable energy. This momentum could be best economic

option for rural electricity in developing countries. Water energy as power generator that clean, affordable, and environment friendly possessed very important role for sustainable future. (Erinofardi, 2017) described different return of investment of renewable energy resources. The micro-hydro had return of investment from 1 to 6 years, wind energy had 8 to 13 years, while the solar panel had 12 to 21 years. This description showed that the micro-hydro circuit had the highest or most beneficial return of investment when was being compared with other renewable resources. The fact was micro-hydro power circuit development performed slow progress in Indonesia, in spite of the abundance of potential micro-hydro resources in the country. Data showed that many areas in Indonesia still had low electricity ratio number.

(Rogers, 2003) stated that adoption rate was defined as relative speed of an innovation adoption by members of a social system. (Rogers, 2003) added that when the individuals number who adopted new idea was put in an across time cumulative frequency base, the distribution result was an S-shape curve. There were only few individuals who adopted innovation in early stage of each time period (one year or one month for example). These very first adopters who was categorized as the innovators. Several time later the diffusion curve started to rise as well as more individuals adopted in each turning time period. Then the adoption rate direction started to become shallow again as well as fewer individuals who still ignored the innovation. At the end of the curve, the S-shape reached its asymptote and the diffusion process had completed. (Rogers, 2003) convinced that the majority of innovation had an adoption level in S-shape. But, there were variations in the S-shape slope of one innovation to another innovation. Some new ideas diffused relatively fast and their S-curves were quite steep. Other innovations had a slower adoption rate and more holistic S-shape, with a slope that was quite shallow.

(Rogers, 2003) emphasized about one diffusion research issue that discuss why some innovations had one rapid adoption rate, while other innovations were adopted slower. Adoption rate usually was measured by time length which was needed for particular percentage from the members of a system in adopting an innovation. Adoption rate was measured against one innovation in a system rather than for an individual as analysis unit. The system could be a community, an organization, or some other structures. Innovations which were understood by the individuals who had control over relative advantage, compatibility, and greater preferences gained high speed adoption rate. Adoption rate also had differences in the same innovation on different social systems. A lot of diffusion aspects could not be explained by only individual behavior. The applied systems had one direct effect on diffusion through their norms and other system levels, as well as the indirect influence through behavior of the individual members (Rogers, 2003).

Innovation communication was defined as a human endeavor in digging and developing information with communication in order to achieve, develop, widespread, or generate a new thing (innovation) in life. Innovation communication became needs in human life

that kept growing in behavior manifestation and behavior development. Human generally also experienced many behavior changes in coping and adapting against environment changes in their life (Sumardjo, 2022). Communication dedication was the realization of change or behavior quality improvement to better quality of life. Human conducted different behavior change with the previous behavior or with the behavior of the people in his or her social environment by became more adaptive through innovation communication. The change was actuated through process of innovation communication by digging and developing information also their implementation that contained innovation materials. One process of innovation communication would be ideal if it was always being started with new idea which was useful for somebody to cope his or her problem in life (Sumardjo, 2022). The actor of innovation communication could be single person, social group, social organization, organization, businessman, or even society citizen. Innovation communication could be done by society because of individual awareness existence that responded an existing idea which could solve the needs and hope of society. This new idea could be useful to be utilized to cope against problems that were challenging the actor of innovation communication (Sumardjo, 2022).

(Njenga et al, 2021). stated that information regarding communication factors that influenced rate of adoption of innovation by an individual was categorized as rare. This scarcity which was mentioned by (Njenga et al, 2021) also occurred in micro-hydro electricity power sector as well. The rate of adoption of innovation influencing factors dynamic and its information scarcity made it perfect for interesting and challenging scientific researches. This interesting and challenging prospect was also the reason why this research aimed to analyze the rate of adoption of innovation of micro-hydro technology users in Kedungrong, Blumbang, and Jarakan Villages in Yogyakarta.

METODOLOGI

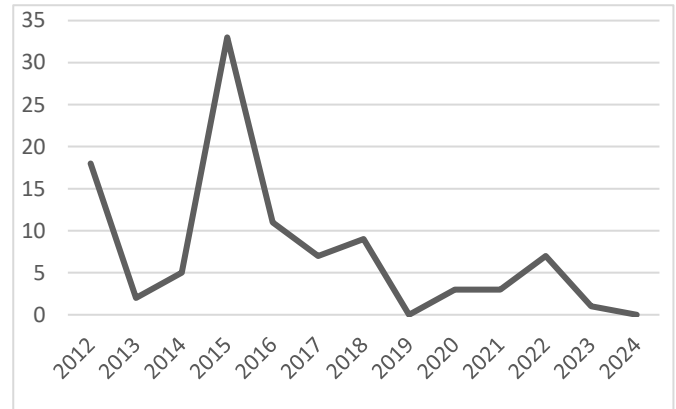
Data Collection

This research adopted survey quantitative research procedure using questionnaire with questions regarding rate of adoption of innovation. The Body of General Affairs, Housing, and Mineral Resources Energy of Yogyakarta Province approved our interviews on July 9th, 2024. Respondents gave written consent for review and signature before starting interviews. This research actually used census method even though not all of the citizen were available for interview and few citizen left their villages for better occupation.

This research took samples of 99 household heads of micro-hydro technology users in Yogyakarta with distribution of 58 household heads in Blumbang Village, 37 household heads in Kedungrong Village, and 4 household heads in Jarakan Village in Yogyakarta. Amount around 84% of the total respondent of household head adopters were male in gender, and around 15% of the total respondent of household head adopters were female in gender. The age of respondent of household head

adopters varied with around 5.1% of the total respondents were 18 to 34 years old, around 44.4% of the total respondents were 35 to 54 years old, and around 50.5% of the total respondents were above 54 years old. The distribution of respondents of household head adopters' education was around 45.5% of them graduated from under high school level school, around 40.4% of them graduated from high school level school up to diploma 2 (D2) level school, and around 14.1% of them graduated from above diploma 2 (D2) level school. The respondent of household head adopters had different income amount monthly, with around 75.8% of them had income under 2 million Indonesian rupiah or about under 121.212 US dollar monthly, around 21.2% of them had income from 2 million up to 4 million Indonesian rupiah or about 121.212 up to 242.424 US dollar monthly, and around 3% of them had income above 4 million Indonesian rupiah or about above 242.424 US dollar monthly. Majority of respondent of household head adopters acted as farmers as occupation or any profession that worked in agriculture sector. Percentage amount of micro-hydro innovation adopter family heads whom could not be interviewed was 20.8% of total micro-hydro innovation adopter family heads.

analysis in around 4 to 6 first years which were 2016 until 2018 had the smaller number of adopters of total respondents which was 27 household heads. The adoption impact which was emerging from micro-hydro technology adoption in around 7 to 10 years adoption time was still being significant, since there were 14 additional household heads who eventually followed their earlier colleague adopters to adopt the innovation.



Source: Author

Picture 1. Yearly microhydro technology adoption by household heads

Data Analysis

Collected data was compiled into tabulation according to its type. The compilation generated result of category of starting years and adoption duration and also category of innovation utilization for house equipment and tools. The data tabulation result became the basic of descriptive analysis of adopter family heads categorization.

Raw data with Likert scoring which had been processed then was transformed into transformation index respectively. The primary data was processed manually into percentage of response per variable item to expose which response that was the most dominant and which response that was the fewest portion. Final percentage was reported in a table form to be discussed much further.

HASIL DAN PEMBAHASAN

1. Results

Rate of Adoption of Innovation Time

Micro-hydro technology innovation adopter communities in Jarakan, Kedungrong, and Blumbang Villages did not adopt the micro-hydro technology in a same time period. Even micro-hydro technology innovation adopter household heads who lived in a same village had different adoption time. Micro-hydro technology adoption distribution in those 3 villages yearly data could be found in the picture 1. The data showed that micro-hydro technology innovation adopters in Jarakan, Kedungrong, and Blumbang Villages generally were categorized as responsive which was indicated by the high adoption rate of micro-hydro technology.

The evidences could be found at the first 3 years which were 2012 until 2015 as the shortest adoption time. This shortest adoption electricity adopter household heads in time had the largest number of adopters of total respondents which was 58 household heads. Long term

Rate of Adoption of Innovation Duration

Rate of adoption of innovation duration dimension was defined as time duration length which was spent by individual adopter or micro-hydro technology innovation user from the first time he or she had applied its introduction until the last time he or she adopted it. This dimension was tremendously dictating the micro-hydro technology assessment which was considered as electricity innovation in Jarakan, Kedungrong, and Blumbang Villages. Communities who lived in those regions had different rate of adoption of innovation duration, if the consideration was the time which they spent from the first time they adopted the innovation. Detail data about local society perspective regarding the adoption time duration of micro-hydro technology could be viewed in table 1.

This data indicated that small part of the micro-hydro technology innovation which had been utilized by their neighbors far before them, so they could believe firmly to the positive side of micro-hydro technology to adopt it next adopter household heads in the 3 villages were highly welcoming and positively responded the existence of micro-hydro electricity generators, so they adopted them rapidly. The data also showed that the majority of micro-hydro technology innovation adopter household heads in the 3 villages were waiting and monitoring for good sign of progress of existence of micro-hydro electricity generators.

This data also provided information that there were other part micro-hydro technology innovation adopter household heads in the 3 villages who in a single governmental period or 5 years, observed evidences of good sign of development of existence of micro-hydro

electricity generators, which had been utilized by their neighbors far before them. Existence of positive empirical evidences boosted their confidence to trust the idea of constructive side of micro-hydro technology to adopt it next. This data gave also an interesting truth that there were micro-hydro technology innovation adopter household heads in the 3 villages who were newcomers or retirement who went back to their The newcomers or retirement persons were interested by good development of the existence of micro-hydro electricity generators. These household heads migrated from big city to live in village side by side with micro-hydro technology as their life activities energy needs fulfillment.

Rate of Adoption of Innovation Intensity

Some micro-hydro electricity adopter household heads utilized it as house industry electricity source such as workshop or carpenter woodworks. The majority micro-hydro electricity adopter household heads utilized it as lamps light electricity source. The majority micro-hydro electricity adopter household heads in the 3 villages felt safer when they utilized it for housekeeping activities such as cloth ironing, fan, air conditioner, or washing machine. Only small part of them who utilized it for kitchen appliances such as rice cooker and mini oven or microwave.

those activities were relatively affordable. The principle was they still afforded to replace or buy the new one when the housekeeping activity tools were having damage which was caused by micro-hydro electricity current instability. The opposite practice was occurred in the purchasing behavior of information equipment which was more expensive. The similar principle was they would face difficulties to change or purchase a new one when the information equipment was having damage which was caused by micro-hydro electricity current instability. This attitude shaped the trend of majority of micro-hydro electricity adopter household heads that felt reluctant to utilize it for information equipment usage.

2. Discussion

Innovator Role in Knowledge Sharing

The micro-hydro adopter communities in the 3 villages personalized the local micro-hydro electricity generator installation operators as their educators. This personalization was evolving simultaneously with the willingness of the local micro-hydro electricity generator installation operators to share their information and knowledge regarding micro-hydro electricity to local adopter communities from time to time. Moments when the local micro-hydro electricity generator installation operators shared their information and knowledge

Table 1. Adopter Amount Based on Time Duration after Founded Installation

Adoption Duration	Kedungrong		Blumbang		Jarakan		Total	
	Amount (Heads)	Percentage (%)	Amount (Heads)	Percentage (%)	Amount (Heads)	Percentage (%)	(KK)	(%)
0 year	19	51.4	0	0	1	25	20	20.2
3 years	5	13.5	40	69	0	0	45	45.4
6 years	12	32.4	11	18.9	3	75	26	26.3
10 years	1	2.7	7	12.1	0	0	8	8.1
Total	37	100	58	100	4	100	99	100

Source: Author

The most interesting fact was that only few micro-hydro electricity adopter household heads who trusted to utilize micro-hydro electricity for information equipment usage such as television, radio, or computer. This preference was being encouraged more by micro-hydro electricity usage safety factor.

The society of micro-hydro adopter in the 3 villages had already understood that electricity current from local micro-hydro electricity generators were unstable. It led to risky consequences to electronic appliances technical age, when being utilized in direct connection in a long term. The solution to overcome the unstable electricity current was by installing the stabilizer tool as mediator for the electronic tools before directly connected to micro-hydro electricity generator hub. Electronic equipment damage risk which was caused by electricity current instability had warned the micro-hydro adopter society in the 3 villages to cautiously utilize the micro-hydro electricity.

Majority of them utilized micro-hydro electricity for housekeeping activities because the tool prices for

regarding micro-hydro electricity to local adopter communities in the monthly communities meeting were considered as a micro-hydro electricity education moments. This illustrated that there was extraversion/positive self-enhancement whose source from psychological motivation in positive feeling expression and self-confidence improvement. This positive feeling expression manifested as satisfaction, proud, or self-esteem reinforcement. The positive feeling expression was empowered by trending religious shows that was famously called as hijrah phenomena, Personal proud feeling was also becoming one considerable aspect (Latuperissa, 2025).

(Winarti et al, 2024) categorized every form of informant reception into 3 forms, which were dominant, negotiation, and opposition meanings. Dominant meaning was a process when the informant received and got the message with positive point of view against the proposed matter. Negotiation meaning was a process when the informant received and got the message with positive and also negative point of view against the proposed matter,

which meant the informant had not fully agreed against the proposed matter. Opposition meaning was a process when the informant received and got the message with evaluative and selective point of view against the proposed matter. The informant preferred to process the information which was accepted by his or her own paradigm or point of view (Winarti et al, 2024).

Communication Channel Role

The insignificant communication channel influence was caused by the lack of optimalization of existing communication channel. Majority of the respondents only used cellphone as communication channel with WhatsApp application in it to communicate between one and another. The usage of it was to discuss matters of micro-hydro utilization incidentally. They usually used it in period of twice a week as the fastest duration in routine fashion. The incidental occasions were usually took place such as decreasing lamps lighting quality or the unlighted lamps because of the decreasing current power of electricity from micro-hydro electricity generator. The adopter community usually contacted the local micro-hydro electricity generator operator when the incidental occasions happened. The lack of communication quality and quantity between community members and local micro-hydro electricity generator operator in micro-hydro matters discussion, triggered the insignificance of communication channel influence to rate of adoption innovation.

Majority of micro-hydro innovation adopters in Jarakan Village always communicated in term of weekly until monthly coordination with other adopters and local operator regarding the micro-hydro electricity utilization. This intensive coordination was possible because the static utilization of micro-hydro electricity as merely lamps lighting electricity source in Jarakan Village. They communicated to each others between adopters and local operator when maintenance, repairment, or even tools addition needs that was utilizing micro-hydro electricity had emerged. The activities of maintenance, repairment, or even tools addition usually were established in period of weeks as the fastest duration time.

Majority of micro-hydro innovation adopters in Blumbang Village were also chose WhatsApp cellphone application as their intensive communication channel for micro-hydro matters. They also always communicated in term of weekly coordination with other adopters and local operator regarding the micro-hydro electricity utilization. They also communicated to each others between adopters and local operator as coordination to fulfill the needs of maintenance, repairment, or even tools addition that was utilizing micro-hydro electricity.

Majority of micro-hydro innovation adopters in Kedungrong Village also chose WhatsApp digital application as their communication channel regarding micro-hydro issues. They selected it because it was considered as easy, fast, and cheaper for their intensive usage. They always communicated in term of monthly coordination with other adopters and local operator regarding the micro-hydro electricity utilization. This

coordination was established to fulfill the needs of maintenance, repairment, or even tools addition that was utilizing local micro-hydro electricity. They usually coordinated monthly simultaneously with routine local community meeting and local micro-hydro electricity utilization retribution payment in Kedungrong Village.

(Irhamdhika et al, 2025) suggested several approaches to deliver more effective communication endeavors to society. First approach was transparent and proactive communication. Government needed to adopt open and transparent communication approach in responding issues that became public attention. Social media utilization as direct communication vehicle with society could improve public trust. The second approach was responsive crisis management. Government public relation supposed to have effective crisis management protocol, including speed of clarification provision and solution against emerging problems. The third approach was collaboration with influencer and independent media. Involvement of public figure, influencer, and independent media to send message that credible and acceptable by wide society. The fourth approach was digital literacy education for public bureaucrat. Public bureaucrat needed to be given better understanding regarding social media dynamic and critic responsive manner constructively.

The effectivity of communication message acceptance by its receiver could be enhanced by marketing communication principle. (Firman, 2024) explored that marketing strategy planning tried to adapt the existing opportunities with organization resources and its dedication, which was what that could and wanted to be done. Communication skill was a thing that was as important as product knowledge. Commercial advertisement campaign had limitation in space and time that was available in electronic and printed media. Utilization of that kind of commercial advertisement bought broadcasting space and time so the message or information could be contented or published by the partner media. Campaign through public relation practices did not provide media space to be contented or published. The public relation messages or information were processed or packed in a particular way into a form of feature or activities that had unique experiences, so might attract society attention. New experiences creation for consumer was not simple. Someone who designed and communicated it must be contributing to make fun atmosfer and unforgettable moment for customer satisfaction. The dedication of fun atmosfer was to make customer happy and became loyal to our products (Firman, 2024).

The marketing communication principle effectivity could be simplified into few types. (Firman, 2024) divided product marketing dedication into few types. They were:

- a. assist the organization and its product and also service to become more famous or acceptable for the customers
- b. assist to promote a new product or product development
- c. assist to improve a product by increase commercial message perfection with consumer new experience addition

d. hunt for new market segment and expand its existence

Utilization of marketing communication principle in innovation socialization considered the message receivers as consumers. (Fitriansyah et al, 2025) stated that consumer with its behavior was a manifestation of bargaining power that became one competitive strength which determined competition intensity and organization benefit. Organization was demanded to be able to win the competition of customer loyalty. This purpose led the organizations to build effective marketing strategy design. As marketer, consumer behavior was a guideline to understand customer, then this understanding built competitive advantage for organization. Customer loyalty maintenance needed organization early steps of market target selection. In order to maintain good relationship with customer, organization often provided education regarding process of product quality and selection which was well-used all these times, so it might lead to many distributors who had willingness to support. Organization utilized marketing communication that optimized collaboration technique directly by direct selling or customer service. Market target was not merely decided spontaneously, but organization saw long-term potential of every customer candidate and decided whether the customer candidate would purchase in periodic time or not. This segmentation was needed in order to reach effectivity and efficiency of organization's messages arrangement because organization had selected customer segment and understood customer character (Fitriansyah et al, 2025).

KESIMPULAN

The rate of adoption of innovation was categorized as high when it was considered from consumed time length. The evidence was there was about 58.6 % or 58 of 99 adopter household heads who adopted micro-hydro electricity in around first 3 years at 2012 to 2015. Majority of the respondents only used cellphone as communication channel with WhatsApp application in it to communicate between one and another. The usage of it was to discuss matters of micro-hydro utilization incidentally. They usually used it in period of twice a week as the fastest duration in routine fashion.

The incidental occasions were usually took place such as decreasing lamps lighting quality or the unlighted lamps because of the decreasing current power of electricity from micro-hydro electricity generator. The adopter community usually contacted the local micro-hydro electricity generator operator when the incidental occasions happened. The lack of communication quality and quantity between community members and local micro-hydro electricity generator operator in micro-hydro matters discussion, triggered the insignificance of communication channel influence to rate of adoption innovation.

The utilization of various communication channel in order to socialize and discuss the micro-hydro issues also became vital necessity. WhatsApp utilization surely could be maintained as fastest and cheapest method of

communication channels between parties. Another type of communication channel could be optimized to reach better effective message delivery. Formal socialization by the authorized government agent regarding the micro-hydro innovation utilization would be highly rewarded by the communities. It might reduce the uncertainties and various false information that spread. Public information media such as brochures or mini-book regarding micro-hydro innovation utilization could help effectively inform the communities in a particular long term.

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