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EMPOWERMENT OF PANIKI MARKET FISH TRADERS THROUGH DIGITAL MARKETING, SIMPLE FINANCIAL MANAGEMENT, COLD CHAIN-BASED FISH STORAGE, AND WASTE MANAGEMENT

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Abstract (English)
This community service program was carried out to increase the business capacity of fish seller groups in Paniki Market, Mapanget District, Manado City which faced various problems, especially the low use of digital technology for marketing, the absence of structured financial records, fish storage techniques that were not in accordance with cold chain standards, and waste management that did not provide added value. The selection of this topic is important because fish sellers in traditional markets have a strategic role in providing fresh food, but they are still lagging behind in the adoption of technology and hygienic business practices so that it has an impact on competitiveness, product quality, and business sustainability. The method of implementing activities is carried out through initial surveys, socialization, thematic training, direct demonstrations, field assistance, as well as knowledge evaluation and changes in business behavior. Activities include digital marketing training through the use of online communication media, daily financial recording training, training on fish storage techniques based on the principle of low temperature, and training on processing fish waste into organic fertilizer. The results of the activity showed an increase in the ability of sellers to create digital catalogs, conduct non-cash transactions, compile cash books, implement fish arrangement with the correct ice layer, maintain the cleanliness of the stalls, and process waste into useful products. In addition, there has been an increase in marketing reach, a decrease in fish damage, and improvements in traders' work patterns that are more systematic and hygienic. The discussion shows that a participatory and applicative approach is able to encourage real changes in daily business practices and have a direct impact on improving product quality, cost efficiency, and environmental sustainability. In conclusion, this program has succeeded in answering the needs of fish sellers through the application of simple but relevant technology, and is able to increase the competitiveness and professionalism of traders in traditional markets.

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Empowerment, Digital Marketing, Fish Storage, Financial Literacy, MSMEs

INTRODUCTION

Traditional markets play an important role in sustaining the local economy through micro-business trade activities. Fish traders are one of the groups that rely heavily on product quality, operational techniques, and marketing strategies. However, the conditions at the Paniki Market show that fish traders still face obstacles in business digitalization, financial management, fish storage that meets standards, and waste management. Digital marketing studies show that the use of social media has been proven to be able to significantly increase the visibility and sales of MSMEs due to its cheap, fast, and wide reach of customers [1], [2]. However, the survey results show that fish traders at Paniki Market have not utilized social media optimally. In the financial aspect, the ability to record transactions has a great influence on business decision-making. Lusardi and Mitchell emphasize that financial literacy is the foundation of micro business resilience because it functions in cost planning, cash flow

management, and profit analysis [3]. However, all traders do not have cash books and still rely on memory.

The quality of fish is greatly influenced by storage techniques. FAO literature states that perishable products such as fish require low temperatures (0–4°C) to slow down bacterial growth and maintain quality [4]. Other research shows that*the ice–fish–ice layering technique can extend the shelf life of fish by up to 30–40% [5].*

In addition, fish waste actually has a use value. Recent research proves that fish waste can be used as liquid organic fertilizer due to its high nitrogen content [6], [7]. However, traders in Paniki do not have this knowledge so the waste is simply thrown away.

Based on this condition, this activity aims to

1. Improve digital marketing capabilities
2. Improve financial literacy
3. Improving cold chain principles-based fish storage techniques
4. Educating the use of fish waste into products with value

This activity is a downstream of relevant research in the fields of MSME digitalization, perishable product management, and waste utilization.

METHOD

The method of implementing this service activity uses a*participatory approach*that involves fish traders as active subjects in all stages of activities. The method is designed to ensure that knowledge changes can develop into changes in skills and business behavior. Broadly speaking, activities are carried out through six main stages:**initial survey, socialization, training, demonstration and direct practice, mentoring, and evaluation.**

1. Initial Survey

The initial survey was conducted to map the real condition of the fish trader's business and identify the most urgent needs. This activity includes field observation of fish storage patterns, stall arrangement techniques, area cleanliness, use of digital technology, and waste management practices. Semi-structured interviews are used to uncover information about simple supply chains, pricing patterns, financial recording habits, and traders' readiness to participate in training. Survey results are used as a basis for preparing material and indicators of program success.

2. Socialization

Socialization was carried out to convey the goals, benefits, and overview of the activities to be carried out. This approach aims to build an understanding and initial commitment of traders. Explanations are given in simple language about the benefits of digital marketing, the importance of financial records, hygienic fish storage techniques, and the potential use of fish waste. Socialization is also a two-way discussion forum to ensure activities are in accordance with the context and needs of partners.

3. Training

The training was carried out in several complementary thematic sessions:

3.1 Digital Marketing Training

Focus on using WhatsApp Business and Instagram as promotional mediums. The material includes creating an account, filling out a business profile, creating a digital catalog, simple product photo techniques, and how to interact with customers.

3.2 QRIS Usage Training

Participants are trained to recognize the concept of non-cash payments, conduct transaction simulations, and understand how to view payment history. The goal is to increase transaction efficiency and encourage business professionalization.

3.3 Simple Financial Record-Keeping Training

The material emphasizes the separation of business and household money and the filling of the daily cash book (income, expenses, balance). Participants are trained to make capital calculations, operational costs, and profit estimates.

3.4 Cold Chain-Based Fish Storage Technique Training

The session emphasized the principle of low temperature (0-4°C), the use of curai ice,*ice-fish layering techniques, and the selection of hygienic containers to suppress the shrinkage of fish quality.*

3.5 Fish Waste Treatment Training

It is focused on making liquid organic fertilizer from fish waste through a simple fermentation process.

Each training material is accompanied by hands-on practice in the field. Participants practiced making digital catalogs, taking product photos, filling cash books, fish arrangement techniques with ice, and the process of making liquid fertilizers. The service team provides corrections, assistance, and adjustments based on the condition of each trader's stall.

Mentoring

Assistance is carried out through periodic visits to traders' stalls to ensure the consistency of the implementation of training results. The focus of the assistance includes monitoring digital marketing activities, completeness of financial records, improving cleanliness and storage of fish, and sustainability of waste treatment. Immediate feedback is provided to improve practices that are not yet optimal.

Evaluation is carried out through several approaches:

1. Pre–post testto measure participants' knowledge improvement after training.
2. Field observationto assess changes in business behavior, including the application of fish storage techniques, shop cleanliness, and the use of digital media.
3. Brief interviewswith participants to find out the benefits they felt and the obstacles still faced.
4. Success indicatorsinclude:
    - ≥70% of merchants have WhatsApp Business enabled and used,
    - ≥70% of traders do daily financial records,
    - decreasing rate of fish damage,
    - Improving the cleanliness of the site,
    - The use of waste into liquid fertilizer.

RESULTS AND DISCUSSION

Community service activities carried out at the fish-seller group at the Paniki Market, Mapanget District, Manado City, show that the transfer of knowledge, appropriate technology, and business management practices have been able to provide real changes both at the individual and group levels. In the short term, the activities resulted in an increase in traders' skills in digital marketing, financial recording, low-temperature-based fish storage, and the processing of fish waste into organic fertilizer. In the long term, this activity is expected to strengthen the professionalism of traders, increase the competitiveness of traditional markets, and create business practices that are more hygienic, efficient, and environmentally friendly.

The implementation of activities is carried out through the stages of socialization, thematic training, direct practice, mentoring, and evaluation. The process is designed to ensure that knowledge does not stop at the theoretical level, but is applied directly by traders in daily operations. Indicators of activity success include skills aspects, behavior changes, product quality, and business output. The benchmarks used include: (1) the number of traders who are able to create and use digital catalogs, (2) the number of traders who consistently record daily finances, (3) reduce the level of fish damage with the application of cold chain techniques, (4)

improve the cleanliness of stalls, and (5) the use of waste into liquid organic fertilizer. Field evaluations showed that most of these targets were achieved because participants showed real implementation after mentoring took place.

Digital marketing activities have a positive impact on market expansion and merchant-consumer interaction patterns. Merchants who previously relied solely on face-to-face sales are now starting to upload daily stock through digital catalogs and respond to customer orders faster through automated messaging features. This proves that the adoption of simple technology can increase product visibility and expand the customer network. In the aspect of financial recordkeeping, significant changes can be seen in the regularity of traders in recording income, expenses, and sales balances. This new habit improves the ability of traders to manage working capital and predict spending needs, so that business decisions are more rational.

The application of cold chain-based fish storage techniques is one of the most beneficial outputs for traders. The ice–fish–ice coating technique and the use of closed containers have been proven to reduce fish damage and maintain freshness quality for longer. Traders report that the appearance of the fish becomes more attractive and does not change color quickly, thus increasing customer confidence. In addition, waste treatment training allows traders to turn unused fish parts into organic fertilizer through a simple fermentation process. This output not only reduces the burden of waste in the market area, but also opens up opportunities for side businesses based on environmentally friendly products. However, this activity also has some weaknesses that need to be observed. Infrastructure limitations, such as uncertainty of ice supply and the unavailability of communal cold storage space, are challenges that can affect the sustainability of the application of cold chain techniques. The uneven level of digital literacy between traders also makes the speed of adaptation different, so more intensive assistance is needed for participants who are still experiencing difficulties. In the waste aspect, some traders still need time to get used to processing waste independently because the fermentation process requires space and time discipline.

The difficulty level of carrying out activities is in the moderate category because most of the material is practical, but behavior change requires time and repeated mentoring. Organic fertilizer production and digital cataloging are outputs that are easy to replicate and have the potential to be further developed. Future development opportunities include the formation of joint venture groups, the adoption of delivery network-based sales, the use of communal freezers, and cooperation with local governments in the provision of cold chain facilities and waste management. Overall, the results of the activity show that this service has succeeded in providing added value to the target community through improving the knowledge, skills, and work patterns of fish traders. The application of appropriate technology and behavior changes that are more hygienic, measurable, and systematic have a positive impact on strengthening business competitiveness in the traditional market. With institutional strengthening and follow-up mentoring support, this activity has great potential to continue to develop and be replicated in other merchant groups in the Manado City area.

CONCLUSION

Community service activities carried out at a group of fish sellers at the Paniki Market, Mapanget District, Manado City, succeeded in increasing the business capacity of traders through the implementation of digital marketing, simple financial recording, cold chain-based fish storage techniques, and the use of waste into organic fertilizer. The implementation of activities shows that the transfer of knowledge and appropriate technology is able to produce real behavioral changes, both in terms of improving stall hygiene, promotional capabilities, financial management, and operational efficiency. The main success of this program lies in the active involvement of traders in every stage of training and mentoring, so that the outputs produced are not only theoretical but actually applied in daily business activities. However,

this program still has several limitations, such as the unevenness of digital literacy, the dependence on the availability of ice to maintain the quality of fish, and the need for longer time to get used to traders processing waste independently. However, these weaknesses actually open up opportunities for further development, including through the provision of communal cold chain facilities, advanced training in digital marketing, strengthening merchant institutions, and replicating activities to other traditional markets in Manado City. Overall, this program has a sustainable positive impact and is an important foundation in strengthening the competitiveness of fish traders in traditional markets through an empowerment approach that is practical, applicable, and relevant to the needs of the community.

SUGGESTION

Community service activities carried out at a group of fish sellers at the Paniki Market, Mapanget District, Manado City, succeeded in increasing the business capacity of traders through the implementation of digital marketing, simple financial recording, cold chain-based fish storage techniques, and the use of waste into organic fertilizer. The implementation of activities shows that the transfer of knowledge and appropriate technology is able to produce real behavioral changes, both in terms of improving stall hygiene, promotional capabilities, financial management, and operational efficiency. The main success of this program lies in the active involvement of traders in every stage of training and mentoring, so that the outputs produced are not only theoretical but actually applied in daily business activities. However, this program still has several limitations, such as the unevenness of digital literacy, the dependence on the availability of ice to maintain the quality of fish, and the need for longer time to get used to traders processing waste independently. However, these weaknesses actually open up opportunities for further development, including through the provision of communal cold chain facilities, advanced training in digital marketing, strengthening merchant institutions, and replicating activities to other traditional markets in Manado City. Overall, this program has a sustainable positive impact and is an important foundation in strengthening the competitiveness of fish traders in traditional markets through an empowerment approach that is practical, applicable, and relevant to the needs of the community.

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