

Evaluation of work ethic, motivation, competence, capability, and integrity of members of the seaweed cooperative (Gracilaria sp.) Agar Sentosa Makmur, Sidoarjo Regency

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ABSTRACT

The work behavior of seaweed cooperative members must demonstrate high performance. Seaweed, as one of the national strategic products being promoted by the Indonesian Government, must be able to compete as a high-quality export product in the global market. This study aims to evaluate the performance of seaweed cooperative members (*Gracilaria* sp.) in terms of developing work ethic, motivation, competence, capability, and integrity in seaweed cultivation in Sidoarjo Regency. A descriptive study using an empirical survey approach was conducted on members of the Agar Sentosa Makmur seaweed cooperative in Sidoarjo Regency. Data were collected through in-depth interviews. The interview results were weighted on a scale of 1-10 and analyzed using statistical tools to determine the correlation between the variables studied. The results showed that the cooperative members' capabilities in cultivation were high. This level of capability still needs to be balanced by improving their competence.

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BACKGROUND

Fish farming business actors in ponds in Sidoarjo district are known to have good performance in the past in polyculture cultivation of tiger prawns (*Penaeus monodon* Fab.) and milkfish (*Chanos chanos* Forsk.). Research (Soedrijanto & Istiqomah, 2016) reported that the performance of tiger prawn farmers in Sidoarjo has succeeded in obtaining world quality recognition in terms of implementing organic cultivation systems through ISO 65 IFOAM certification from naturland Germany.

With the increasing industrial development along the Brantas River basin, coupled with the effects of global climate change, the cultivation of tiger prawns and milkfish is no longer promising. The coast of Sidoarjo Regency ecologically exists as the largest landfill on the East Java coast. This is due to the Brantas River branching point, which is full of industrial areas, at the Porong and Mas Rivers. The advent of *Gracilaria* sp. seaweed cultivation technology, which can thrive in ponds, has provided new hope for aquaculture businesses in coastal areas and fish farms, such as in Sidoarjo Regency. Research (Cokrowati, Abidin, Hardawiansyah, Sulman, & Erwansyah, 2020) reports that the utilization of processed *Gracilaria* sp. seaweed is very diverse, including for food, beverages, medicines, cosmetics, and as an additive for textile and paint processing.

This seaweed is a type of red algae (Rhodophyta). Due to its widespread use, market demand continues to increase (Halid & Patahiruddin, 2020). Furthermore, (Akbarurrasyid, Pietoyo, Astiyani, & Mustia, 2021) noted that seaweed is a priority program under Presidential Regulation of the Republic of Indonesia Number 3 of 2017 concerning the Action Plan for the Acceleration of National Fisheries Industry Development. Specifically for the *Gracilaria* species, due to limited cultivation land, numerous cultivation engineering technologies are being implemented to increase productivity.

To obtain quality seaweed products, a series of attitudes are required that demonstrate commitment and consistency among seaweed farmers. This is fundamental because the cultivation and post-harvest processes required by farmers appear very simple. However, if existing technical procedures are not carried out properly and correctly, the final quality of the seaweed flour can be low.

Recognizing the significant challenges faced by seaweed farmers in ponds, consistency and commitment to implementing proper cultivation procedures are key to successfully improving the quality of seaweed products from Sidoarjo. This ensures the seaweed produced is highly competitive in the international market and guarantees substantial and sustainable business profits.

This study aims to evaluate the performance of seaweed (*Gracilaria* sp.) cooperative members in developing work ethic, motivation, competence, capability, and integrity in seaweed cultivation in Sidoarjo Regency.

RESEACRH METHODS

This descriptive research, using a semi-qualitative analysis approach, was conducted in Jabon sub-district, Sidoarjo Regency. This area is home to fishing villages and fish farmers in ponds with a polyculture system of shrimp, milkfish, and seaweed.

a. Research Design

The research began with a general observation of the existing aquaculture environment and the socio-economic aspects of the members of the Agar Sentosa Makmur seaweed cooperative. The research was empirical in nature. Therefore, each interview required a specific and varied approach to encourage respondents to provide open and honest answers or statements. Researchers ensured that respondents were in good psychological condition during the interviews to ensure the results were suitable for analysis.

b. Research Variables

The variables studied were 1) work ethic, 2) motivation, 3) competence, 4) capability, and 5) integrity. Work ethic relates to the methods used by cooperative members to cultivate seaweed. In this case, the focus is on the ability to manage time, implement correct work procedures, and a tireless attitude in caring for the cultivated seaweed. Motivation refers to a strong will to achieve the best seaweed cultivation results. Competence refers to the set of knowledge and skills mastered by the research respondents, related to the ability to cultivate seaweed properly and correctly. Capability refers to a set of constructive skills and expertise in seaweed cultivation, from seedling stage to post-harvest. Integrity refers to a set of disciplines as members of a seaweed cooperative oriented towards achieving the highest quality in accordance with Indonesian national standards in SNI 8228:2:2015 concerning Good Fish Cultivation Practices (CBIB) Part 2: Seaweed. The research question on the integrity variable is also related to the implementation of SNI 7983.1:2014 concerning Seaweed Drying Facilities – Part 1: Wooden Shed Model.

c. Population and Sample

The study population consisted of 119 cooperative members, who are both pond owners and fish farmers using a polyculture system that produces seaweed. Eligible cooperative members were: 1) have more than 5 years of experience cultivating seaweed, 2) own their own pond or are part of a farming family, 3) are members of the cooperative, and 4) are familiar with the type of seaweed *Gracilaria* sp. being cultivated.

d. Data Processing Techniques

Data were obtained using survey techniques combined with structured, systematic, and in-depth interviews using a closed system. Structured means that each question asked must meet the information needs for each research variable. Systematic means that the implementation stages must be sequential and refer to the research design.

In-depth interviews using a closed system mean that the list of questions is known and understood only by the researcher. Closed-system data collection techniques technically require the researcher to gather information one by one and ensure that respondents' answers are truly specific to the issues discussed during the interview.

Research data validation was obtained using a triangulation and role-sharing approach, as in research (Sa'adah, Rahmayati, & Prasetyo, 2022) and (Alfansyur & Mariyani, 2020). The triangulation and role-sharing processes were conducted more than once to ensure that respondents had provided information worthy of being converted into research data. At this stage, confirmation of answers between respondents can be conducted cross-checked with several different respondents at different times.

e. Analysis Technique

The analysis began with the formulation of information from each respondent, then the description of the information was transformed into data. This transformation of the descriptions into data used a weighting technique. To determine the weight of a respondent's description of information, the researcher referred to the seaweed standard operating procedure (SOP). Therefore, to observe the extent to which the SOP was followed, the researcher also conducted direct field observations. The researcher's involvement as part of the Agar Sentosa Makmur cooperative management was a key factor in the validity of this research data.

The analysis was conducted using the gap analysis technique, as has been done in research (Bappenas, 2016), (Istiqomah, 2018), (Soedrijanto, Mas, Mauladi, & Prihartini, 2019), and (Ismail, Iba, Rumagesan, & Istiqomah, 2023). The results of the gap calculations arising from the various research variables are presented in a spider web diagram as a basis for compiling a description of the research results (Tokita, Matsushita, & Asakura, 2020).

The next stage after the gap analysis was the data analysis using SPSS version 2.3. Using this statistical tool, the researcher explored the extent of the relationship and level of interconnection between each research variable.

RESULT AND DISCUSSION

The results of the gap analysis, as shown in Table 1 below, indicate that improving work ethic and competency is a priority for improving seaweed farmer performance. This is indicated by the negative gap value in the shift share gap analysis. This means that seaweed farmers still need to strive to improve their competencies related to their product and profession; and to enhance their work ethic by providing more enthusiasm and care for the technical aspects of planting, caring for, harvesting, and storing seaweed harvests.

Table 1st. Gap Analysis

	Standard	Achievements	Lowest	Highest	Gap score
Work ethics	7,000	6,336	5,000	9,500	-0,664
Motivation	7,000	7,769	6,000	9,000	0,769
Competence	7,000	6,176	5,500	9,500	-0,824
Capability	7,000	8,126	7,000	9,500	1,126
Integrity	7,000	7,197	6,000	9,500	0,197

The competency predictor variable had a value of minus 0.824, indicating that competency is related to the education level of cooperative members, the majority of whom have elementary and high school education.

The work ethic predictor variable had a value of minus 0.664, conveying a profound message that work ethic, as related to the best possible behavior (work), accompanied by elements of applying technical ethics in carrying out work, still displays several aspects of inadequate value. Close observation of the behavior of fish farmers revealed a persistently rude attitude toward planting seaweed seedlings, manifested by the impression of haphazard planting, inaccurate spacing, or simply planting seedlings into the soil within the pond plots. Underlying this rude attitude is the perception that seaweed thrives easily even when planted haphazardly. As a result, in many pond plots, seaweed vegetation appears uneven, and the physical characteristics of the seaweed show thin plant stems.

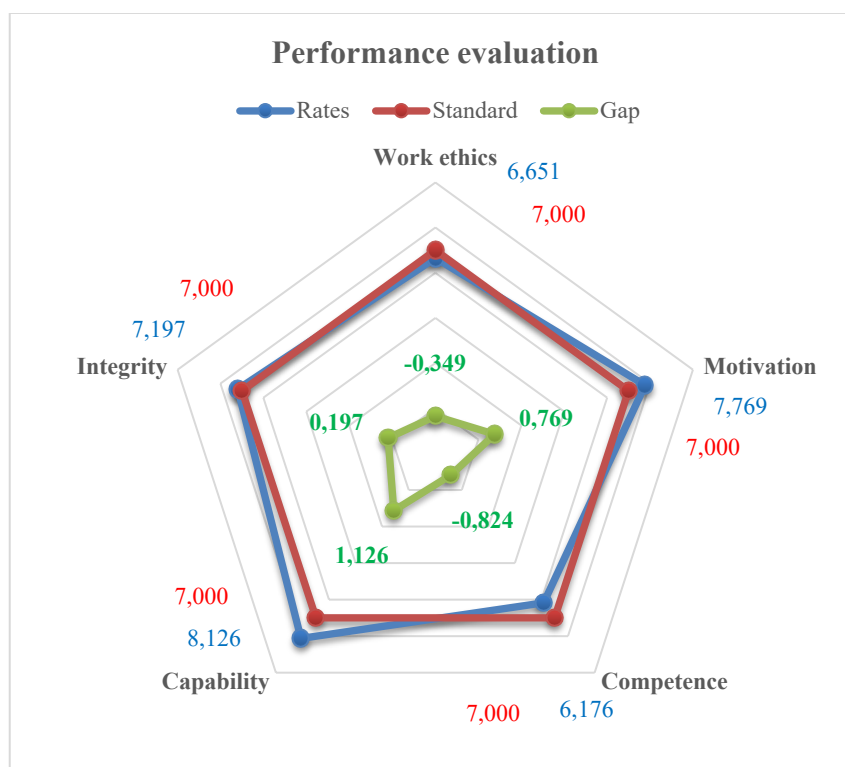


Figure 1st. Performance evaluation

The integrity predictor variable appears to show a positive gap value, but with a low difference of 0.197. This indicates that the integrity of the fish farmers in cultivation and post-harvest management, although considered good, still needs to be improved. Integrity predictors relate to the identity of a fish farmer as a technical worker who must carry out every detail of their work with a strong scientific and technical understanding and responsibility.

This scientific and technical understanding and the manifestation of responsibility demonstrated in work behavior are also fundamentally related to the assessment results of the fish farmer's level of competence and work ethic.

Performance is fundamentally supported by motivation, capability, and integrity; however, in fact, it is not yet supported by the work ethic and competence of the members of the Agar Sentosa Makmur cooperative. A negative notation indicates deficiencies that must be addressed to meet expected performance standards. This fact returns to the policy of the cooperative management to encourage farmers to improve their work ethic and competence, through various mentoring, training, and education schemes. To ensure the long-term sustainability of seaweed cultivation production,

motivational encouragement for the younger generation from the families of farmers who are members of the cooperative requires serious attention for implementation and development. Work ethic and competence are crucial elements going forward so that the seaweed farming business continues to grow and is able to build independent downstream processes in the Jabon sub-district, Sidoarjo Regency, which has become a center for seaweed production.

According to Elizabeth & Anugrah (2020), downstream processing in various industries, especially agricultural ones, must be carried out seriously and with attention to quality. Quality is crucial for agricultural products because these products will eventually be used by humans as food, beverages, medicines, and health products. Therefore, achieving quality-based performance is crucial. Furthermore, Nurhayati, Rais, Sukainah, Jamaluddin, & Lestari (2022) remind us that the seemingly simple seaweed post-harvest process should not be underestimated by the parties involved in each stage of post-harvest management. Each stage of seaweed harvest handling, carried out diligently, determines whether the dried seaweed harvest will become a quality industrial raw material or not.

The results of the correlation analysis indicate a highly significant reciprocal effect (<0.01) between the capability and competency variables. A significant effect (<0.05) is also demonstrated in the two-way correlation between the competency variable and work ethic, and between the integrity variable and work ethic.

This highlights the importance of paying attention to the alignment between competency and capability. Alignment can be achieved and will provide stronger empirical significance for efforts to improve cooperative member performance if the level of education, knowledge, and familiarity with technology, which are components of competency, are truly embedded in cooperative members. Therefore, cooperative members should begin to consider improving their own competencies (especially for their children and family members) through higher education, increasing their knowledge by attending various seminars and training on seaweed, and conducting comparative studies to identify the best seaweed cultivation and processing technologies.

The quality of seaweed cultivated in Indonesian aquaculture farms is influenced by the skills and expertise of the farmers in managing water resources (Waluyo, Permadi, Fanni, & Soedrijanto, 2019). Quality plays a crucial role in determining the selling price of seaweed on the market. The management of the Agar Sentosa Makmur seaweed cooperative plays a crucial role in establishing business communications with various seaweed buyers. These business communication efforts must also be balanced with the good performance of the cooperative members to produce high-quality seaweed products.

The results of the cultivation and post-harvest processes are crucial for the production stages of seaweed processing into food, beverages, medicines, cosmetics, and other organic products for human consumption. The cultivation and post-harvest stages may seem straightforward and simple. However, both farmers and post-harvest workers must be meticulous in harvesting, degreasing, and drying the seaweed. Clean, dried seaweed that meets established quality standards is a desirable raw material for the processing industry.

Work ethic (X1), based on empirical research on cooperative fish farmers, turns out to be meaningless if it only focuses on the heads of families. The work ethic of cooperative members, most of whom also work on their own seaweed farms, requires both moral and material support from other family members. Moral support takes the form of enthusiastic work ethic, attention and a conducive household atmosphere, cheerful behavior, and effective, quality communication between family members. Material support manifests in forms of primary material value related to fulfilling basic human needs, such as providing food and drink, providing certain herbal medicines and vitamins, preparing preferred work clothes, and a comfortable resting place (household management).

Empirical research on the predictors of motivation (X2) indicates that economic motives, related to efforts to meet the family's needs for food, clothing, shelter, and education, are the primary reason for the strong motivation to work.

Competency (X3) was successfully understood through an immersive approach to cooperative fish farmers in lively discussions with their families; it emphasized awareness of the importance of competency improvement, especially for the children of cooperative fish farmer families. The in-depth discussions revealed that some of the cooperative fish farmer families have advanced education, including graduate degrees, work abroad, become business owners, and have completed education in information technology and various engineering disciplines. Some of the cooperative fish farmers' children are even studying and completing medical education. Indirectly, this has broadened the scientific knowledge and understanding of cooperative fish farmers, which is related to a shift in more productive thinking and technical efforts derived from the knowledge shared by their families.

An in-depth analysis of capability (X4) demonstrated increased empirical innovation and creativity, in the form of numerous problem-solving techniques implemented through various technical interventions. Simple, well-implemented examples include understanding the engineering of pond fertilizer dosages, the construction of highly effective seaweed draining platforms along pond embankments for drying seaweed, and so on.

Integrity (X5). Repeated observations and in-depth discussions ultimately revealed the integrity of the cooperative's fish farmers. Improved work ethic due to family support, strong motivation to improve economic capacity, broad access to knowledge and skills as a basis for improving competency, and the development of creative innovation all mutually influenced the formation of effective and efficient seaweed cultivation and post-harvest work patterns. Integrity is empirically evident in the numerous commitments, promises, and work plans that were properly fulfilled as intended.

In general, the performance evaluation results of the Agar Sentosa Makmur cooperative's fish farmers proved quite good, although several predictor variables still need to be improved and refined. The role of the family, particularly women as wives, which was not examined as a predictor variable in this study, is also strongly suspected to have a significant influence on producing good work evaluations.

According to (Ansar, Manda, & Sumilih, 2022), women and their families play a crucial role in improving the performance of seaweed farmers. The patience, perseverance, and involvement of women and their families in the post-harvest process motivate men to focus more on seaweed handling according to standard operating procedures. Furthermore, (Herawati & Lutfianah, 2023), in a similar case study, emphasized that women are strongly motivated to engage in economically valuable activities due to the strong drive to increase their family income.

Based on these studies, greater involvement of women and their families in the post-harvest phase of seaweed farming appears to be a solution to maintaining the quality of the seaweed harvest.

CONCLUSION

Efforts to obtain quality seaweed must begin with improving the competency of seaweed farmers. In addition to improving competency, members of the Agar Sentosa Makmur seaweed cooperative must strengthen their capabilities and motivation in seaweed cultivation and post-harvest practices and also improve their quality-oriented work ethic. This is fundamental because high-quality, clean, dried seaweed products can foster more effective business communication among cooperative administrators, leading to higher seaweed prices for the processing industry..

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