

PAPER • OPEN ACCESS

Social media influence on the promotion of sustainable fisheries management: Insight from Indonesian blue swimming crab

To cite this article: D Darmawan *et al* 2024 *IOP Conf. Ser.: Earth Environ. Sci.* **1400** 012038

View the [article online](#) for updates and enhancements.

You may also like

- [Inclusive blue swimming crab fishery management initiative in Betahwalang Demak, Indonesia](#)
A Ghofar, S Redjeki, H Madduppa *et al.*
- [The exploitation status and spawning potential ratio of blue swimming crab \(*Portunus pelagicus*\) in North Natuna Sea, Indonesia](#)
M Fauzi, A R P Pane, M Taufik *et al.*
- [Life history and spawning potential of blue swimming crab *Portunus pelagicus* \(Linnaeus, 1758\) in Pamekasan, Madura Island, Indonesia](#)
A Ervinia, K C Nugroho and W Setioko



ECS The Electrochemical Society
Advancing solid state & electrochemical science & technology

ECS UNITED

247th ECS Meeting
Montréal, Canada
May 18-22, 2025
Palais des Congrès de Montréal

Showcase your science!

Abstracts due December 6th

Social media influence on the promotion of sustainable fisheries management: Insight from Indonesian blue swimming crab

D Darmawan^{1,2,*}, Sutinem³, M Yaskun³, MW Taqiyuddin¹ and FYD Maulydya¹

¹ Indonesian Blue Swimming Crab Association (Asosiasi Pengelolaan Rajungan Indonesia-APRI), Surabaya, Indonesia

² Master's degree in Management, Faculty of Economics, Islamic University of Lamongan, Lamongan, Indonesia

³ Departement of Management, Faculty of Economics, Islamic University of Lamongan, Lamongan, Indonesia

*Corresponding author: rajunganindonesia@gmail.com

Abstract. Blue swimming crab is one of potential fisheries commodities in Indonesia that has been mainly exported to America. Crab industry contributed to national economy due to high export volume and value. The use of social media has surged due to digitalization, becoming a crucial marketing strategy for maximizing business profits. The role of social media in non-profit organizations for fisheries sustainability campaigns remains unexplored. Therefore, this study aimed to analyze the role of social media in promoting sustainable blue swimming crab fisheries programs in Indonesia. Data was collected for 14 days from 31 social media users on various platforms, such as Instagram, Facebook, LinkedIn, and YouTube. SmartPLS 3.2.9 was applied to analyze the effect of recall, recognition, alternative, and recalling on blue swimming crabs fishery programs on interaction and effectiveness consumer brand engagement (CBE). Results showed that the most recognized fisheries sustainability programs for blue swimming crabs were crab apartment and GTK-5 Minutes. Meanwhile, the crab enlargement program and APRI Youth Innovation were known through moment-open recruitment. Knowing and following APRI's social media has significant effect on CBE's interaction and effectiveness. Social media could also be used as a marketing strategy to promote sustainable fisheries management programs. The research reveals the significance of social media in fostering consumer engagement and promoting sustainable practices in fisheries management programs by non-profit organization through effective marketing strategies.

Keywords: blue swimming crab; fisheries management; non-profit organization; social media

1. Introduction

One of the fishery commodities that is currently the mainstay of non-oil and gas exports is blue swimming crab (*Portunus pelagicus*). Blue swimming crab are fishery product potential in Indonesia, crab is a fishery commodity that is mainly exported to America. This commodity is a superior fisheries



commodity with value and export volume for a decade ranks in the top five [1]. Currently, all crab export needs still rely on marine catches, so it is feared that it will affect natural populations.

The campaign of sustainable strategies for to prevent and increase awareness in using social media. Social media has become one of the alternatives in the field of marketing. Along with continuously evolving technology, a transition in marketing activities has emerged. The advancement of technology like social media, which can be accessed anytime and anywhere [2], showcases the increasing use of social media in Indonesia. The We Are Social report showed that approximately 167 million Indonesian citizens, or about 60.4% of the domestic population, have been utilizing social media [3]. The high number of social media users has led numerous companies and organizations to carry out promotional activities on social media platforms. The role of social media is crucial in disseminating information about current environmental conditions. According to studies conducted, the millennial generation shows a greater concern for the environment compared to other generations [4]. This is because millennials are proactive in seeking and processing information related to environmental responsibility, which serves as a form of self-affirmation.

Indonesian Blue Swimming Crab Association (APRI), as one of the organizations focusing on preserving the sustainability of the blue swimming crab fishery, also utilizes social media as a promotional tool to foster sustainable crab fishing. The blue swimming crab has become a prominent commodity, contributing significantly to the country's foreign exchange earnings through Indonesia's capture fisheries. The regulations pertaining to blue swimming crab capture in the Ministry of Maritime Affairs and Fisheries Regulation No. 16 of 2022 are among the efforts to conserve natural resources. However, the importance of alternative programs for fishermen to support these regulations also needs attention. The awareness of all Indonesian citizens regarding the sustainability of natural resources must be continuously enhanced. APRI employs various social media platforms such as Instagram, Facebook, LinkedIn, Twitter, and YouTube to promote programs related to sustainable fisheries management. These social media platforms serve as a technological tool in the digital era to heighten public awareness. Given these issues, this study aimed to analyze the role of social media in promoting sustainable blue swimming crab fisheries programs in Indonesia.

2. Methods

2.1. Data collection

A total of 31 respondents were selected as the research sample using accidental sampling to gather their perceptions regarding the usage of social media platforms (Instagram, Facebook, LinkedIn, and YouTube) and the effectiveness of promoting APRI's sustainability programs. The survey was conducted online through the web-based application www.kuesio.id to facilitate questionnaire distribution and responses by the respondents during June 2023. A Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was employed to measure each respondent's perception in the study. Operational definitions of variables, in line with the research objectives (Table 1), were established prior to the formulation of the questionnaire and its distribution to the respondents.

Table 1. Operational definition of variable.

Variabel	Variabel	code	Item
Brand Awareness	Recall of the brand (x1)	x1.1	knowing APRI's social media accounts
		x1.2	following APRI's social media accounts
	Recognition of the brand by several programs (x2)	x2.1	being aware of APRI's sustainability programs
x2.2		implementing those programs	
x2.3		encouraging others to implement those programs	
Putting product of the brand in the selection alternative of purchase (x3)		x3.1	wanting to implement those programs

Table 1. Operational definition of variable (cont.).

Variabel	Variabel	code	Item
Brand Awareness	Putting product of the brand in the selection alternative of purchase (x3)	x3.2	being more familiar with blue swimming crab through APRI than other accounts
		x3.3	thinking of APRI when hearing about blue swimming crab
	Keep recalling the product of a brand while using the product of competitive (Consumption) (x4)	x4.1	viewing APRI as a leader in blue swimming crab management in Indonesia
		x4.2	finding APRI's programs quite appealing
Social Media	Interaction (based on post content) (y1)	x4.3	being confident in the benefits of APRI for blue swimming crab in Indonesia
		y1.1	always staying informed about APRI's social media content updates
		y1.2	finding the posted content informative
		y1.3	finding the posted content easily understandable
		y1.4	finding the posted content actionable and implementable
	effectiveness of consumer brand engagement (CBE) (y2)	y1.5	finding the posted content beneficial for sustainability
		y2.1	feeling inspired by APRI's social media to adopt sustainability principles
		y2.2	feeling proud for implementing the sustainability principles shared on APRI's social media
		y2.3	being fully dedicated to implementing the sustainability programs shared on APRI's social media
		y2.4	feeling glad to be able to apply the sustainability programs shared on APRI's social media

2.2. Data analysis

The descriptive analysis method is employed to provide a general overview of the social media interaction with the posted information and content, as well as the respondent profiles. Meanwhile, the partial least squares (PLS) analysis is used to determine the influence of four factors—recall, recognition, alternative, and recalling—on the interaction and effectiveness of Consumer Brand Engagement (CBE) for the four APRI programs (crab apartment, 5-Minute GTK, crab cultivation, and APRI Youth Innovation).

3. Results and discussion

3.1. Blue swimming crab fisheries management

Blue swimming crab have quite a big impact on Indonesian fisheries through the Crab fishery supply chain, Crab fish are a catch commodity that is vulnerable to exploitation. Various program approaches for sustainability continue to be campaigned. one of the improvement programs such as FIP also continues to be strengthened. The use of social media can be used as a medium to provide information and reach areas that have not yet become the focus of organizations in developing sustainable fisheries based on public awareness. The crab fishery monitored from fisheryprogress.org is also quite good with no red indicators [5], meaning that the crab fishery in Indonesia has made improvements. The FIP that has been implemented is also continuing to be campaigned to all stakeholders in the crab fishery. Social media is one of the tools that can be used as a place for promotion to effectively campaign to increase awareness.

3.2. APRI social media insight

APRI utilizes social media platforms to provide information and conduct campaigns for sustainable fisheries. APRI's social media targets specific segments on each platform. The APRI social media presence includes Instagram, Facebook, LinkedIn, Twitter, and Youtube. Among these, Instagram, Facebook, and LinkedIn are the top three platforms in terms of total followers, with 2868, 2100, and 1891 followers, respectively. Following these are 482 followers on YouTube and 160 followers on Twitter.

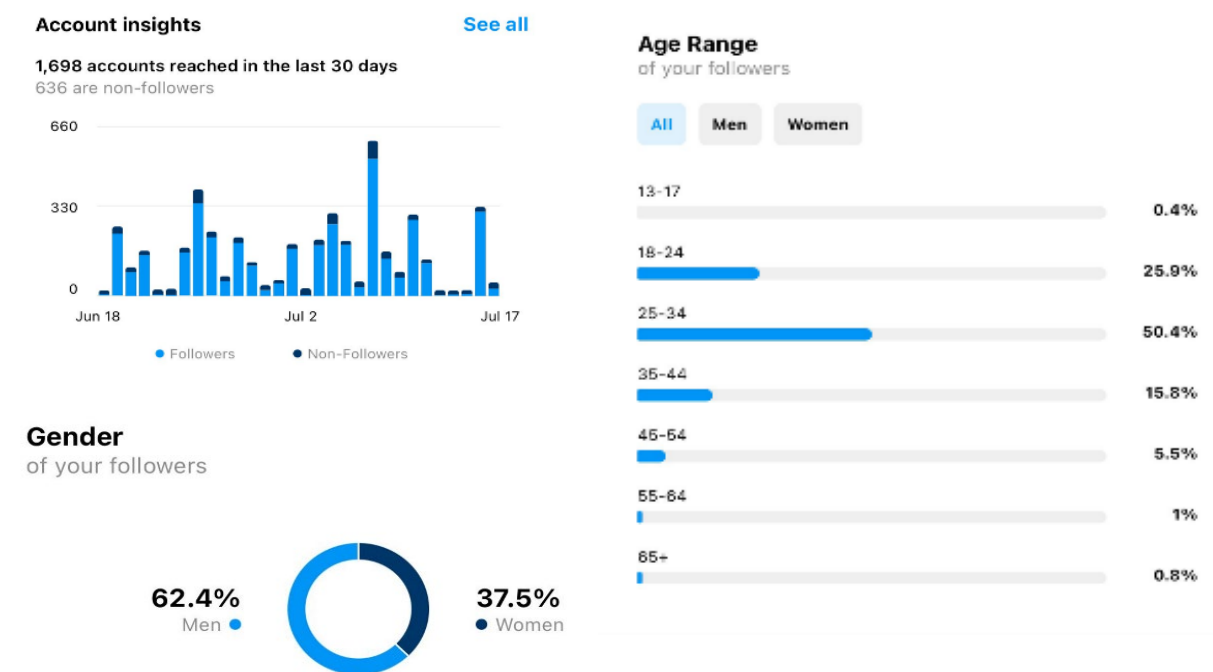


Figure 1. Insight of instagram interaction and follower profile.

Figure 1 illustrates Instagram's dominance as a notably effective platform for conveying information about sustainability programs, primarily followed by 62.4% of males within the age range of 25 to 34, constituting 50.4% of the total followers. This insight can be utilized as a foundation for content development and promotional strategies to disseminate information about sustainability programs through social media posts.

3.3. Respondent profile

Respondent profiles are used as a reference for the perception trends generated from the survey. Descriptive segmentation is conducted using frequency values and percentages (Table 2).

Table 2. Respondent profile based on age and social media access.

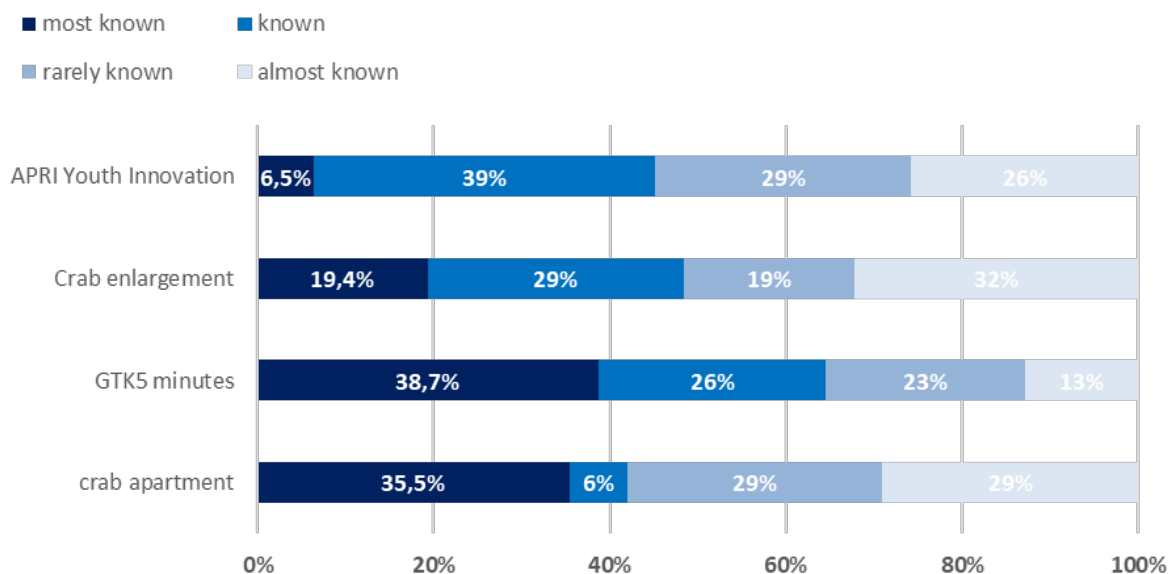
	CATEGORY	TOTAL	PERCENTAGE
age	Z generation (8-23 y.o)	8	26%
	millennial (24-39 y.o.)	23	74%
know about BSC	Yes	31	100%
	No	0	0%

Table 2. Respondent profile based on age and social media access (cont.).

CATEGORY		TOTAL	PERCENTAGE
know about APRI from	instagram	27	87%
	facebook	2	6%
	linkedin	2	6%
time access of social media	least than 1 hour	6	19%
	around 1-2 hour	13	42%
	more than 2 hour	12	39%

The majority of respondents (74%) fall within the millennial generation, with an age range of 24-39 years [4]. They possess a sufficient understanding of the blue swimming crab to be aware of APRI's sustainability programs through social media. With a social media access duration of 1-2 hours, this is considered ample to assess the social media interest trend among millennials among the research respondents. Aligned with APRI's Instagram follower count, a significant portion of respondents, 87%, or 27 out of the total 31, became aware of APRI through the Instagram social media platform.

Referring to the four focused APRI programs under study, Figure 2 illustrates the levels (based on percentages) of recognition for each program, ranging from the most recognized to nearly unknown.

**Figure 2.** From known to almost known sustainability program.

APRI's programs can be a means of information and education for APRI's social media followers. The graph above shows that the sustainable management program uses the GTK5Minutes campaign and the program for making crab apartments, followed by crab cultivation and APRI Youth Innovation.

3.4. Brand awareness, interaction, and CBE social media to support sustainability program

Brand awareness, consisting of four factors—recall, recognition, alternative, and recalling—is linked to the interaction and effectiveness of consumer brand engagement (CBE) from the sustainability programs (crab apartment, 5-Minute GTK, crab cultivation, and APRIYouth) that have been posted on APRI's social media. Partial least squares (PLS) analysis is employed to identify these correlations.

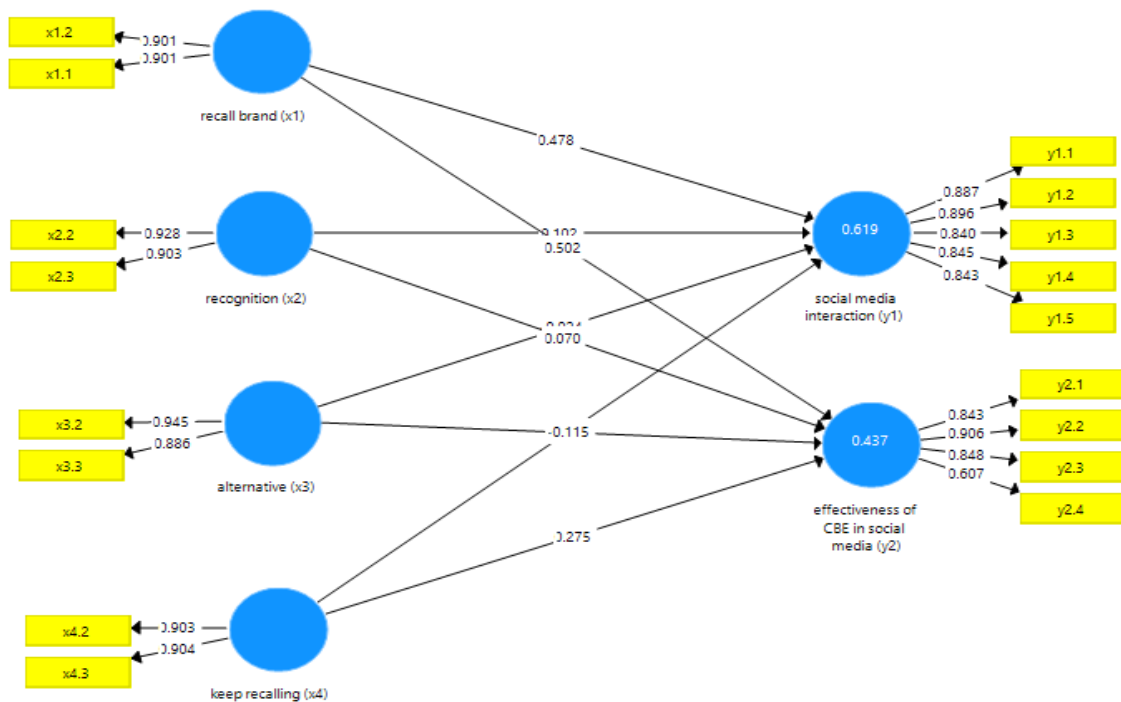


Figure 3. Relationship model of social media with the crab apartment program (72% of model eligibility).

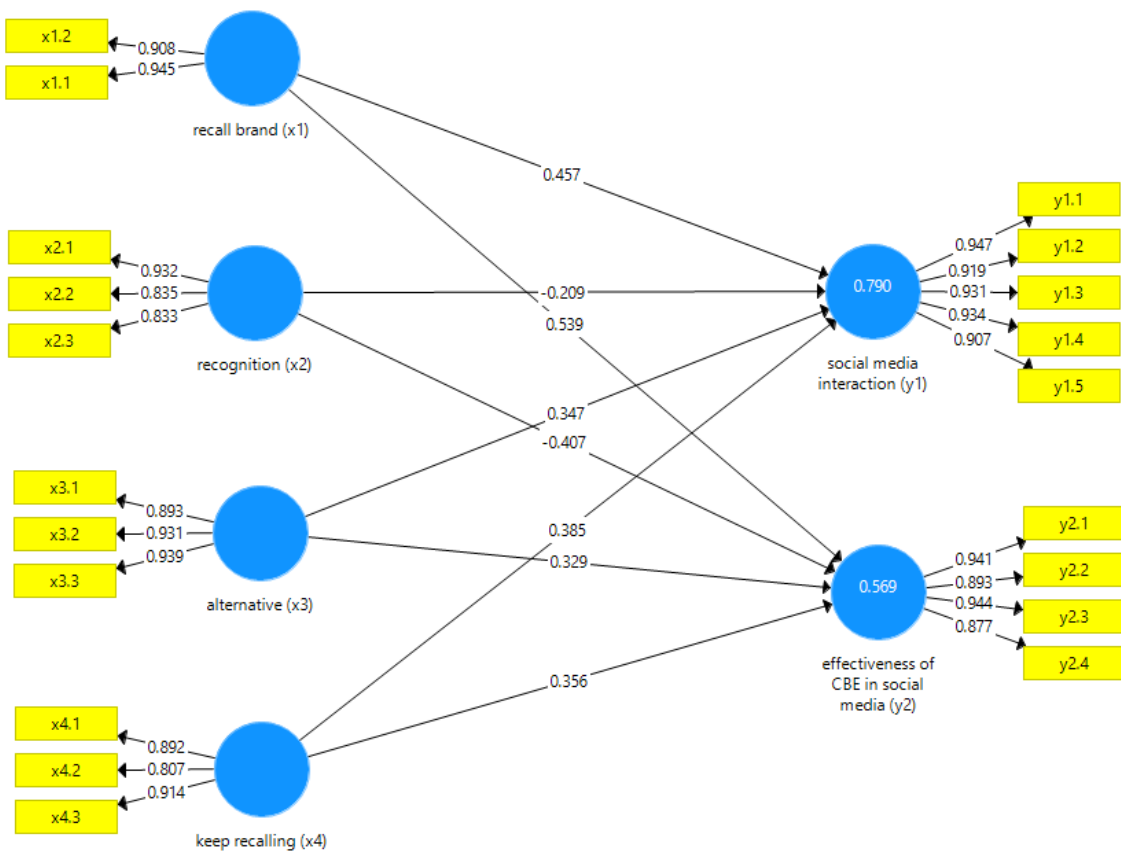


Figure 4. Relationship model of social media with GTK5minute program (88% of model eligibility).

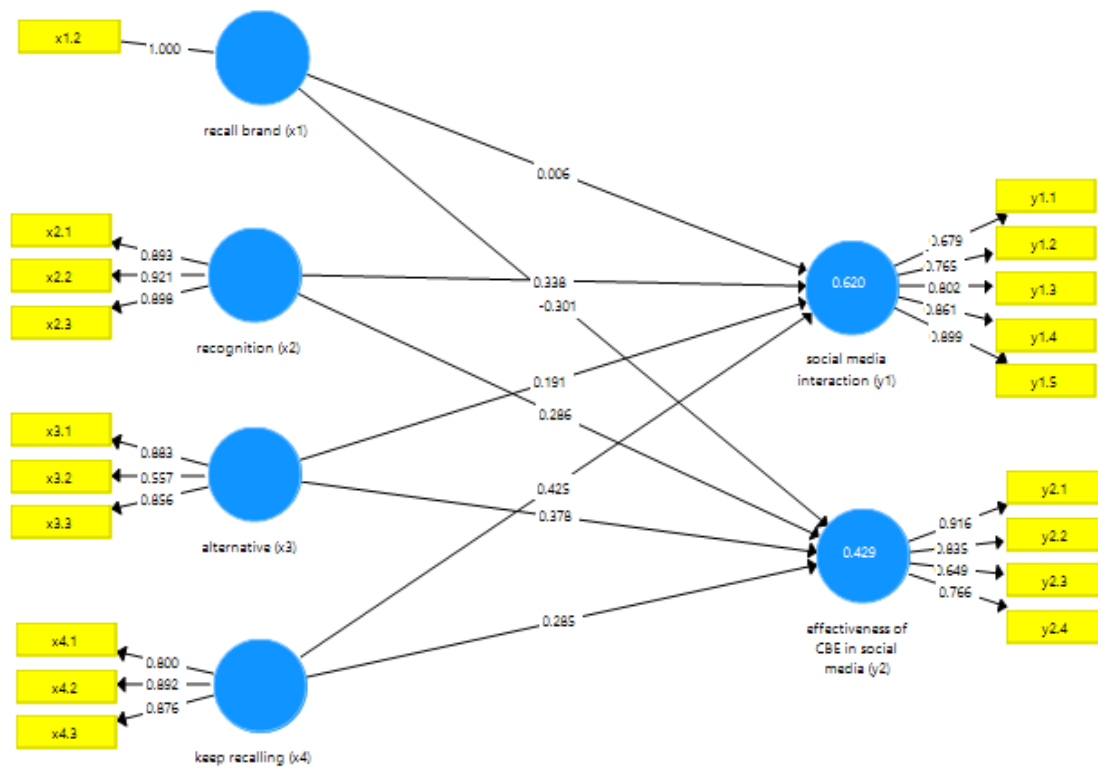


Figure 5. Relationship model of social media with APRI Youth Innovation program (73% of model eligibility).

Table 3. Resume of PLS results from three sustainability program.

Sustainability program	Significantly interaction	p-value	Critical value (α)	Supporting/dominant indicator
Crab apartment	Recall brand to social media interaction	0,013	0,050	1. Already follow of APRI social media, 2. Informative content posting, 3. Has a pride to be an implementer of sustainability program that post by APRI
	Recall brand to effectiveness of CBE in social media	0,018	0,050	
GTK 5minutes	Recall brand to effectiveness of CBE in social media	0,049	0,050	1. Know about APRI social media, 2. Dedicated to be implementer of sustainability program by APRI, 3. APRI social media is inspired to implementation a sustainability program
APRIYouth	Keep recalling to social media interaction	0,011	0,050	1. APRI program is quite interesting, 2. Useful content posted for sustainability
Crab enlargement	<i>Non-significantly interaction</i>			

For the crab apartment program, respondents stated that they have been following APRI's information updates through social media. They indicated that posts about the crab apartment have informative content and the implementation of sustainability principles, particularly leading to a sense of pride among the respondents themselves. This indicates that social media is effective in promoting the crab apartment program through content interaction and the effectiveness of conveying information for the improvement and sustainability of crab fisheries. Regarding the 5-Minute GTK program, respondents familiar with APRI's social media are at the stage of having full dedication to implementing the program, but the effectiveness only reaches the stage of being inspiring without reaching full implementation. This can be understood as the 5-Minute GTK program is targeted at fishermen when they catch small crabs (<10cm). However, the average respondents in this study are not fishermen. Concerning the APRI Youth program, respondents stated that the APRI program is quite appealing with its beneficial content, especially for sustainability. The social media interaction is at a stage where respondents tend to choose APRI's social media over other institutions or associations' social media related to sustainability programs for crab fisheries. Regarding crab cultivation, there is no single indicator that is mutually related and affects the interaction and effectiveness of conveying information about the crab cultivation program. This can be understood as the program started in April 2023.

Social media is one of the globally utilized technologies that has undergone drastic development due to technological advancements and innovations. Business organizations require social media platforms and marketing to enhance their sales and profits. Non-profit organizations may share similar objectives with profit organizations in utilizing marketing, but their goals largely differ from profit organizations [6]. The role of social media for non-profit organizations is not centered around sales and revenue but rather on generating hype and promoting their programs to increase public awareness and encourage action [7]. This aligns with the role of APRI's social media, which is used to build public awareness about the sustainability of blue swimming crab fisheries in Indonesia. Non-profit organizations have also begun integrating social media into their campaigns as a tool to recruit volunteers and secure funding [8].

According to Ogden, digital marketing is the activity of promoting and finding markets through online digital media using various tools like social networks [9]. The benefits of utilizing digital marketing include **rapid dissemination**, as marketing strategies using digital media can be executed very quickly, even within seconds. Additionally, digital marketing can be measured in real-time and accurately. Another advantage is **ease of evaluation**, where outcomes of marketing activities can be directly discerned, including information such as how long a product was viewed, the percentage of sales conversion from each advertisement, and so on. Equally important is **the broader reach**; the extensive geographical scope of digital marketing spreads products across the world with just a few simple steps, leveraging the internet [10].

As a non-profit organization, the differences in objectives within digital marketing are not vastly different; however, they cannot be equated. For APRI, leveraging digital marketing serves as a promotional medium to reach as many audiences or followers as possible while delivering information related to blue swimming crab fisheries. In business marketing, there is a term called the marketing funnel, which represents a strategy where your customers or consumers progress toward becoming buyers.

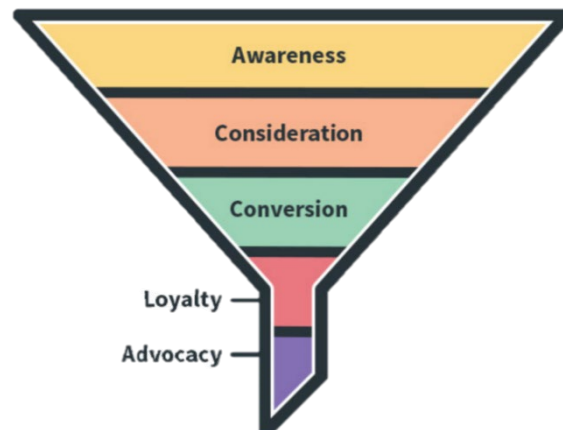


Figure 6. Social media marketing funnel (Source : [11]).

Figure 6 illustrates several points regarding the social media marketing strategy. As a non-profit organization, the goal is to achieve broad reach to enhance public awareness, which corresponds to the awareness stage. In social media, to gauge the impact of APRI's social media role, insights provided by the social media platform can be examined.

Impressions within APRI's social media indicate that visitors have taken various actions such as viewing, liking, and sharing. At one point, APRI's social media account reached 35,989 impressions on Instagram, with 1,067 users visiting APRI's social media. In terms of reach, 10,700 social media users have seen APRI's posts.



Figure 7. Impression and reach instagram of APRI (source : [12]).

Insights from impressions and reach can be utilized to understand an individual's awareness when making a awareness decision [13].

4. Conclusion

The crab apartment and GTK5-Minute programs are the most recognized, while crab cultivation and APRI Youth Innovation are known through specific open recruitment for APRI Youth Innovation. Being aware of and following APRI's social media is the initial step that significantly influences CBE interaction and effectiveness. Social media also plays a crucial role in promoting sustainable fisheries management as an information hub for blue swimming crab-related matters and internet traffic, positively impacting public awareness that can be used as a marketing step or strategy to introduce sustainable programs.

Author statement

All authors had equal contributions to this study and agreed to the published version of the manuscript.

Credit authorship contribution statement

Dicky Darmawan: Conceptualization, Methodology, Data curation, Formal analysis, Investigation, Visualization, Writing – original draft. **Sutinem:** Supervision, Writing – review & editing. **Mohammad Yaskun:** Supervision, Writing – review & editing. **Muhammad Wijdan Taqiyuddin:** Investigation, Supervision, Writing – review & editing. **Fitriyani Dewi Maulydya:** Data curation, Formal analysis, Supervision, Writing – review & editing.

Acknowledgments

Acknowledgments to APRI (Indonesian Blue Swimming Crab Association) for supporting data related to APRI's social media such as Instagram, LinkedIn, Facebook, Twitter, and Youtube, as well as respondents who participated in filling out the questionnaire.

References

- [1] Ministry of Marine and Fisheries 2022 Export Performance of Indonesian Fishery Products in 2018 <https://kkp.go.id/djpdspkp/artikel/7947-kinerja-ekspor-produk-perikananindonesia-tahun-2018>
- [2] Aboulhosn, S. 2020 How to build a social media marketing funnel that converts Retrieved from Sproutsocial: <https://sproutsocial.com/insights/social-mediemarketing-funnel>
- [3] Andreani, F., Gunawan, L., & Haryono, S 2021 *Journal of Management and Entrepreneurship* **23**(1) 18 – 26.
- [4] Bhati, A., & McDonnell, D. 2020 *Nonprofit and Voluntary Sector Quarterly* **49**(1) 74-92.
- [5] APRI 2023 Asosiasi Pengelolaan Rajungan Indonesia Fisheries Improvement Project (FIP) website : www.apri.or.id.
- [6] Central Bureau of Statistics 2021 Age clasification based on generation.
- [7] Helbert, J. J., & Ariawan, I. G. S. P. 2021 *Eqien: Journal of Economics and Business* **8**(2) DOI : <https://doi.org/10.34308/eqien.v8i2.276>.
- [8] Nguyen, Y. T. H., & Nguyen, H. V. 2021 *Asia Pacific Journal of Marketing and Logistics* **33**(1), 231–249 DOI : <https://doi.org/10.1108/APJML10-2019-0612>.
- [9] Ogden, T. N., & Starita, L. 2009 *Philanthropy Action* **4** 1 – 21.
- [10] Pangestika, N. L. 2018 *The influence of using WhatsApp social media on the dissemination of learning information at Public Senior High School 5 Depok [Bachelor's thesis]* Jakarta: FITK UIN Syarif Hidayatullah Jakarta.
- [11] Purwana, D., Rahmi, R., & Aditya, S 2017 *Journal of Civil Society Empowerment (JPMM)* **1**(1) 1 – 17.
- [12] Rajunganindonesia 2023 Instagram of Indonesian Blue Swimming Crab Association : Insight and engagement report available online at <https://www.instagram.com/rajunganindonesia/?hl=id>
- [13] S. Widi. 2023 There will be 167 million social media users in Indonesia in 2023 Available online at <https://dataindonesia.id/internet/detail/pengguna-media-sosial-di-indonesia-sebanyak-167-juta-pada-2023>
- [14] Sakib, S. M. 2022 The role of social media in marketing of non-profit organizations *Center for Open Science*