

The Role of Online Social Media to Support Seaweed Farmers in Indonesia: A Conflict Resolution Strategy

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Abstract: The current study aims to introduce online social media to support seaweed farmers and as a conflict resolution strategy. Seaweed farmers have the power to develop seaweed because the product has a positive impact on the socioeconomic. This study observes the roles of online media in supporting seaweed production. This research found that an increase in seaweed production can improve the economic conditions of the community. The weaknesses of seaweed farmers are their low capital, low skills, low level of education, and low support for infrastructure. One skill required is the mastery of technology, especially online media. Online media are one of the vital tools that can help seaweed business processes. Therefore, seaweed farmers should know how to use online social media. The potential cultivation of seaweed is very much enhanced by a pattern of cooperation between seaweed farmers, other farmers, and other collaborations. The threats faced by the research area include the diminishing desire of the younger generation to cultivate seaweed, the very low skill related to using online social media, and extreme weather as an annual problem. We find that the role of online media is crucial to minimizing the risk factors for conflict.

Keywords: Online Media, Skill, Education, Technology, Conflict Resolution Strategy.

1. INTRODUCTION

Natural and agrarian resource conflicts are increasing in Indonesia due to the injustice in the ownership of natural resources (Pulubuhu *et al.* 2018). Based on data from the Indonesian Community Based and Ecological (Huma) Legal Reform organization, 326 natural and agrarian resource conflicts occurred up to December 2018 in Indonesia (Antara 2020). These conflicts occurred in 32 provinces and 158 regencies and cities, which resulted in 286,631 people dying, specifically, 110,294 local people and 176,337 indigenous people, and involved a land area of approximately 2,101,858,221 ha. Dahniar Adriani, Director of the Indonesian Huma Association, said that the most frequent conflicts in Indonesia were plantation and forestry conflicts (Antara 2020). There were approximately 156 plantation conflicts involving a land area of 619,959.04 ha, which resulted in 46,934 deaths, specifically, 21,785 local people and 25,149 indigenous people. In addition, there were approximately 86 forestry conflicts that occurred on a total land area of 1,159,710,832 ha and involved 121,570 people, specifically, 26,569 local people and 95,001 indigenous people (Antara 2020). The data above show that the conflicts in the forestry sector involve the largest land area. Based on data from the

Huma Association, companies were one of the most frequent actors in natural resource and agrarian conflicts, with 221 conflicts and 31 conflicts caused by ministries in charge of national parks and forestry, respectively. (Antara 2020). These conflicts included 39 cases with 374 victims, 47 arrests with 777 victims, 12 cases that caused 29 the death of people, and 25 cases of the prosecution that affected 309 people (Antara 2020). Furthermore, there were 24 cases of agrarian disputes that occurred in various regions of South Sulawesi Province until 2018 including Gowa, Bone, Bulukumba, Enrekang, Takalar, Wajo, Selayar Island, and Makassar city (Chandra 2019). The large number of areas where natural resources and agrarian conflicts occur in South Sulawesi Province, especially in Bulukumba Regency, is one of the reasons that this research was conducted in South Sulawesi.

In addition, conflicts involving seaweed farmers are generally caused by the threat of waste from the tourism and household industries, uncertain price fluctuations and even low prices, unfavourable weather, seaweed management efforts very slowly resulting in better products, and a lack of support from local governments. Laws that are often used to address natural resources and agrarian conflicts are Law No. 18 of 2013 concerning the eradication of forest destruction and prevention and Act No. 41 of 1999 concerning forestry. President Dr. H. Susilo Bambang Yudhoyono passed the law of the Republic of Indonesia No. 18 of 2013 on August 6, 2013, to safeguard the use of

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forests in a rational, optimal, planned and responsible manner.

Moreover, COVID-19 has had a negative economic impact in almost all countries in various parts of the world (Cynthia Hlengwa 2020; Newsroom 2020). The income of business operators has decreased dramatically due to the low purchasing power of the people. The Minister of Finance of the Republic of Indonesia, Sri Mulyani, stated that the projected growth in Indonesia's gross domestic product (GDP) is a work in progress and that the next few quarters have gloomy projections. For the second quarter, which is ongoing until the end of June 2020, the Indonesian government projects that the economy will shrink by 3.8 percent. In addition, GDP growth in the second quarter, which began in July 2020, is predicted to grow at approximately 1.4 percent or weaken to minus 1.6 percent. For the fourth quarter, the Indonesian government hopes that the economy will start to record growth of 3.4 percent or at least 1 percent (Woro Yuniar 2020). Therefore, to avoid an economic recession, the central government is committed to developing a competitive, reliable, and sustainable seaweed industry. This strategy is implemented by the government because the seaweed industry can be a pillar for the economic growth of coastal communities, especially those located in disadvantaged areas in the midst of the crisis of the COVID-19 pandemic.

2. METHODOLOGY

The researchers conducted a six-month-long observation. During the observation process, the researchers examined seaweed-producing areas in South Sulawesi, and the resulting production was in the form of dry and wet seaweed. Researchers also examined the cultivation methods generally used by the community. Focus group discussions and workshops were held for six months; then, in-depth interviews were conducted from 2019 to 2020, which were continued to assist the people. During the interview process, the researchers inquired about various problems experienced by seaweed farmers that caused the low productivity of processing seaweed into processed products. The researchers provided material on the importance of using online media in marketing seaweed products and determining seaweed prices on the market. During the workshops, the researchers taught how to process dried seaweed into alginate, agar and carrageenan so that it can be a product that is ready for consumption. This research was conducted from 2019 to 2020. This research used SWOT as the

analytical tool for the research. SWOT analysis can be a strategic planning tool for supporting economic activities, especially seaweed production in an area. This analysis model can also be a complete guide or framework used by the Indonesian government or local governments to establish policies to meet the interests of their territories. Moreover, this analysis model can be useful as an instrument in conducted all strategic analyses so that an organization, group of people or a government can identify the threats or weaknesses they possess in order to minimize the threats they face and strengthen their weaknesses.

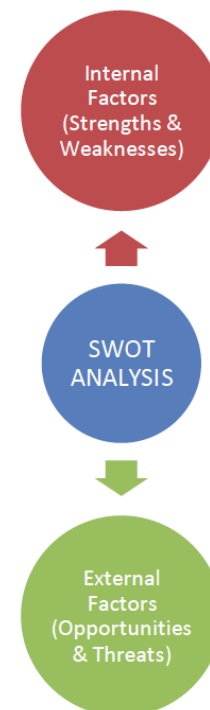


Figure 1: SWOT Analysis.

Source: (Gurel 2017).

SWOT analysis has four components: strengths, weaknesses, opportunities and threats. Strengths and weaknesses are internal factors, while opportunities and threats are external factors (Gurel 2017). The four components are shown as one illustration in the following figure.

The four components above are identified through this research to produce a strategic formula useful for seaweed farmers. This analysis is also intended to maximize the strength and future opportunities of using online media as a conflict resolution strategy. This research seeks to minimize the weaknesses and threats. Moreover, these four components can detect early situations that occur at the research site. SWOT analysis can be used by seaweed farmers to promote

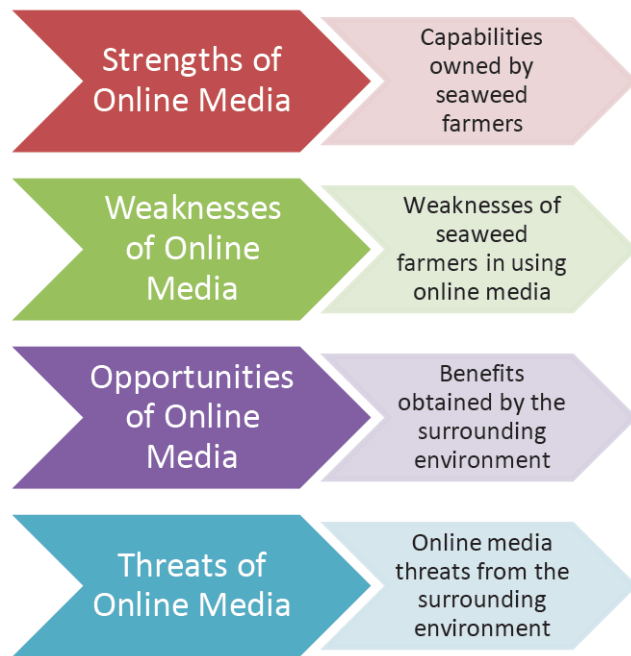


Figure 2: Components of the SWOT Analysis.

seaweed results. Through this analysis, seaweed farmers can also obtain information related to seaweed such as market prices and good ordering methods. Furthermore, the researchers identify the role of the media and leverage the power of the media, the weaknesses of not using the media, the opportunities farmers will obtain when using the media and the media power in facing threats. This research was conducted in South Sulawesi Province in the eastern part of Indonesia.

3. LITERATURE REVIEW

There are various social media platforms available in Indonesia, such as Twitter, Instagram, YouTube, Facebook, Telegram, Cocoa Talk, Line, and WhatsApp. The total number of social media users in Indonesia before 2019 reached 150 million users. This number showed that approximately 56% of the total population of Indonesia was social media users at this time (Websindo 2019). This condition illustrates the enormous interest of the Indonesian people in using the internet as a medium for socializing. Furthermore, among the social media platforms, the most widely used is YouTube (Websindo 2019). YouTube provides a great attraction for social media users because users can promote merchandise; post movie trailers, music video clips, and vlogs; review items of interest and present live streaming features. Live streaming allows one to interact with the people watching through activities that are broadcast live. In addition, the

audiovisuals on YouTube can be used as a source of information by users, such as tutorial sources and entertainment sources; in addition, users can select items to purchase. Furthermore, social media users are generally aged between 18-34 years and are both male and female (Websindo 2019). This shows that the productive age period determines the number of social media users. This condition provides a reason for the government to involve productive users in supporting the role of social media in increasing seaweed production.

The use of digital technology is very beneficial for farmers and fishermen because they can access detailed information on prices, raw materials and the sale and purchase of agricultural and marine products. Several policies have been implemented by the Directorate General of Informatics Applications at the Ministry of Communication and Information to accelerate the application of technology in various strategic sectors. One application is the Go Online Farmer Programme. This programme was developed by the developer of the 8 Villages agricultural application and the Ministry of Communication and Information. Nizam Waham, who serves as Acting Director of the Digital Economy and Directorate General of Informatics Applications, said that the Go Online Farmer Programme will not create new applications but will utilize multiple stakeholders to facilitate farmers accessing the buying and selling process in the market so that there is increased agricultural production (Kominfo 2018). This programme provides facilities to farmers in the form of an online agricultural extension application, a national agricultural marketplace, and stock control information.

The Go Online Fisherman Programme, which aims to utilize technological applications appropriately to encourage the improvement of fishermen's welfare, specifically to increase family income and provide guarantees for the safety of fishermen, is a form of the same programme as the Go Online Farmer Programme. This programme presents various marine and fishery innovations so that the fishing process is easier. One innovation launched by the Marine Research Centre of the Ministry of Maritime Affairs and Fisheries is the smart fisherman information system known as Nelpin. The Directorate of Information and Communication of the Economy and the Maritime Ministry of Communication and Information said that the Nelpin programme is very beneficial for fishermen because it can change the paradigm of those who initially had the slogan of fishing in the sea into fishing

at sea (Hariyanto 2020). Nelpin was developed in 2015 and is an Android smartphone-based application. This application combines various forms of application, such as the fertility of Indonesian waters, variations in fish prices, weather information in various regions, estimated fishing area maps (PPDPs), and assistance features. To introduce this programme, the local government cooperated with the Office of Maritime Affairs and Fisheries and the Directorate for Information and Communication of the Economy and Maritime Affairs to conduct familiarization in various regions throughout Indonesia. This familiarization provides understanding and improved skills in utilizing the Nelpin application for fishermen.

4. ANALYSIS

Seaweed or marine algae is a biological resource that has no roots, stems or leaves and can be found in coastal areas. There are approximately 10,000 species of seaweed and a variety of species such as red, brown, and green (Raj 2018). There are approximately 221 species of seaweed that have selling value (Ferdouse, Holdt, Smith, Murúa, & Yang, 2018:1). Based on distribution and abundance, the species of seaweed that is most often used for commercial manufacturing with extracts for applications in horticulture and agriculture is brown seaweed (*Phaeophyta*). Seaweed is one of the food sources for coastal people because it contains a rich composition of nutrients such as sulfur, potassium, chlorine, calcium, phosphorus and magnesium. Seaweed production reached 14,7 million tonnes in 2005, with the contribution of the culture sector being 13.5 million tonnes (brackish water culture of 46,729 tonnes, freshwater culture of 53,157 tonnes, and marine culture of 13,4 million tonnes). The amount of seaweed production doubled in 2015, reaching 30,4 million tonnes. The capture sector contributed 1,1 million

tonnes, and the cultural sector contributed 29,4 million tonnes (Ferdouse *et al.*, 2018). Figure 3 below shows the increase in the amount of seaweed production from 2011 to 2015.

Indonesia, with approximately 61,000 km of coastline and 17,504 islands, is the second-largest producer of cultured seaweed in the world after the People's Republic of China (PRC). Based on FAO data, Indonesia contributed nearly 38 percent (11,3 million tonnes) and China contributed 47 percent (14 million tonnes) of the global production of farmed aquatic plants (mostly seaweed), which totalled approximately 29.4 million tonnes, in 2015 (Ferdouse *et al.*, 2018:15). Seaweed farming is one of the activities contained in the fishery sector in Indonesia. Table 1 below shows the seaweed production in Indonesia from 2010 to 2015.

Indonesia in general is the largest producer of the *Euclima* and *Kappaphycus* seaweed species. Sulawesi Island is one of the islands that produce a large amount of seaweed (Ferdouse *et al.*, 2018). Nevertheless, in their research, Zamroni and Yamao found that there were several risk factors in cultivating seaweed, namely, conflicts of interest, security, environmental concerns, and accessibility (Zamroni and Yamao 2011). Seaweed is one of the commodities that have high economic value because this commodity can support the Indonesian economy. Seaweed can be used as a basic ingredient for various products ranging from consumables to beauty products. Nevertheless, seaweed processing in Indonesia still faces many obstacles and challenges. Therefore, the productivity of seaweed cultivation in Indonesia is relatively low. In general, seaweed farming communities consume minimally processed foods. The communities lack the skills to process seaweed into carrageenan and agar. For this reason, the role of online media can become a solution to solve this issue. The purpose of this study is to introduce the public to the importance of online media in developing seaweed, which can also support the economic welfare of seaweed farmers' families and serve as a conflict resolution strategy.

4.1. Strengths

Indonesia has an area of 5.8 million km² of seawater, consisting of 2.95 million km² of archipelagic waters, 0.3 km² of territorial sea area, and a 2.55 million km² of an exclusive economic zone (ZEEI). Indonesia is located between the continents of Australia and Asia and between the Indian Ocean and

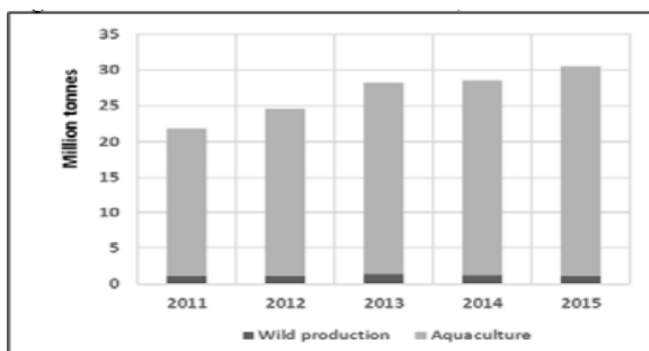


Figure 3: Production of seaweed in the world, 2011-2015.

Source: (Ferdouse *et al.*, 2018:3).

Table 1: Seaweed Production of Indonesia from 2010 to 2015

	Weight in tonnes					
	2010	2011	2012	2013	2014	2015
Aquaculture <i>Eucheuma seaweed nei</i>	3,399,436	4,539,413	5,738,688	8,232,263	8,971,463	10,112,107
<i>Gracilariaria seaweed</i>	515,581	630,788	776,166	975,211	1,105,528,6	1,157,234
Total aquaculture	3,915,017	5,170,201	6,514,854	9,298,474	10,076,992	11,269,341
Wild Production	2,697	5,479	7,641	17,136	70,514	78,230
Total	3,917,714	5,175,680	6,522,495	9,315,610	10,147,560	11,347,571

Source: (Ferdouse *et al.*, 2018:16).

the Pacific Ocean. Indonesia has geopolitical strength because Indonesia is the world's maritime axis in the global supply chain system that connects the continent of Australia and the Asia-Pacific region. Indonesian marine waters have 555 species of seaweed (Indonesia 2020). A large number of seaweed species is one of the strengths of Indonesia because of the related economic value. Some studies have shown that seaweed farming has a positive impact on the socioeconomic (Bindu, 2011; Msuya, 2006; Namudu and Pickering, 2006; Sievanen *et al.*, 2005; Arnold, 2008).

This situation also motivates seaweed farmers in South Sulawesi Province to cultivate seaweed continuously. Bulukumba is a district in South Sulawesi that produces seaweed. The Bulukumba district has large seaweed production, and the development centre is Sapu Lohe Village, with an area of 15.74 km². This village is located approximately 50 m above sea level. This situation supports the efforts made by its residents in cultivating seaweed. The strength of Sapu Lohe Village is its status as a successful seaweed development centre. Another strength possessed by the Bulukumba district is that the development policy established by the Regent of Bulukumba District has an advantage for seaweed farmers, which is the governance of the utilization of marine and fishery resources that are competitive, fair and sustainable. To support this power, this study provides knowledge to the people in the Bulukumba district regarding the role of online media in increasing the production of seaweed and minimizing the risk of conflict. Increasing the yield of seaweed production can improve the welfare of coastal communities.

4.2. Weaknesses

In general, communities and seaweed farmers have little skill related to processing and cultivating seaweed. This condition is due to the low level of formal

education they possess and the lack of socialization of seaweed empowerment from the government. Capital in empowering seaweed is also very lacking such that seaweed processing results are not optimal. Therefore, social media platforms are needed to improve these conditions, especially to increase the capital owned by farmers. In their article, Grizane and Jurgelane stated that social media became a vital tool in business processes (Grizane and Jurgelane 2017). Social media, especially online media, is a necessity for farmers to market their seaweed products. The use of the internet in the Bulukumba district is increasing, especially among young people. However, some seaweed farmers in remote locations that are not reached by the internet still used traditional methods, such as prices set by traders.

4.3. Opportunities

The opportunities for seaweed farming in the Bulukumba district are significant. Some seaweed farmers have collaborated with collecting traders. This cooperation is limited only in terms of bargaining. The collaboration that has been conducted with the local government is workshops. The pattern of cooperation in the seaweed farmer community with capital owners is still very limited. Collaboration between capital owners and smallholder farmers and between farmers and the government is one model that can be used to help seaweed farmers improve their family welfare, which in turn impacts the family's economic welfare. This pattern of collaboration can continue to increase with the support of online media.

Online media can be a creative and inspiring communicator in encouraging productive relationships to turn into cooperative relationships. In his writing, Kenix stated that online media can be an alternative media practice (Jean Kenix 2009). This statement supports online media as one of the information technologies in seizing opportunities for seaweed

cultivation cooperation. The development of seaweed into processed foods that are cheap and easily obtained, especially through online media, will give more value to seaweed production.

4.4. Threats

The ignorance of the public in using the internet to market seaweed products is a weakness and can also become a threat. Another threat is that the desire of the younger generation to continue their parents' efforts is very low. In general, young people prefer to work in the industrial sector in Makassar city or become civil servants. Therefore, seaweed farmers should teach young people to know how to periodically monitor seaweed, how to harvest seaweed, and the right postharvest technology for seaweed drying, sorting and packing into ready-to-market items. Cultivating seaweed is one of the main jobs in the Bulukumba district. Bindu combined scientific and social aspects to research the cultivation of seaweed in coastal communities in India (Bindu 2011). One of the scientific requirements is knowledge on using online media. Indonesia in general is the largest producer of *Eucheuma* and *Kappaphycus* species among all countries (Ferdouse *et al.*, 2018), as mentioned above; therefore, Indonesian people, especially seaweed farmers in the Bulukumba district, should seek to improve their skills in using online media.

Another threat faced by the Bulukumba district is the extreme weather facing the district. Heavy rains and strong winds that hit the district impact seaweed cultivation. This condition is an annual problem faced by seaweed farmers. This situation impacts seaweed production, which has also declined. The government's role in overcoming extreme weather is crucial. The role of online media in providing information about extreme weather is also needed by seaweed farmers.

5. DISCUSSION

5.1. SST Theory

This research employs the theory of social shaping of technology (SST). SST theory provides a description that can connect non-social science and social science because the theory explains scientific innovation in the economic and social fields in detail. One researcher showed that technology determinism connects technology and society (Kline 2015). Another scholar further developed SST theory into the theory of the religious-social shaping of technology (RSST).

Campbell said that RSST theory focuses on the involvement of religious communities in using new media forms by considering networked technologies and the new digital age (Campbell 2017). Campbell further explained the role of religious actors in discussing their spiritual activities and relationships online so as to create what is called digital religion studies (Campbell 2017). Another scholar explained that RSST theory focuses not only on media content but also on the use of media, creativity in giving meaning to the media, the understanding and use of technology because of moral codes, religious community beliefs and historical traditions related to forms of media technology (Andok 2018). This research develops SST theory into the economic-social shaping of technology (ESST) approach to examine the role of online media in supporting seaweed farmers. The ESST approach is analysed through SWOT analysis.

5.2. The Economic-Social Shaping of Technology (ESST) Approach

This study examines the association of individual roles in creating messages on media to support increasing seaweed results. There are four stages in the economic-social shaping of the technology approach; the first is investigating the strengths of an area or an organization. When the socioeconomic power of a region or an organization is known, the application of technology, especially online media, will be easy to implement. After knowing the strengths possessed by a region, then the benefits of online media are identified. Online social media can be used for marketing campaigns to promote seaweed results, introduce new seaweed brands and provide the maximum number of services to consumers (Fournier and Avery 2011; Weinberg 2009). Therefore, it is also necessary to increase public awareness, especially among seaweed farmers, regarding the transformative influence caused by digital technology in the economic sector. The second stage is identifying the weaknesses of an area or an organization. One of the weaknesses of seaweed farmers in the Bulukumba district, as mentioned in the analysis above, is the lack of skills that seaweed farmers have in processing seaweed. The skills that are lacking in processing seaweed have an impact by decreasing the production quality. This situation affects the price of the seaweed market that has not been able to compete. To overcome this weakness, seaweed farmers should plan activities related to the expertise in processing seaweed found online so that seaweed farmers can determine their

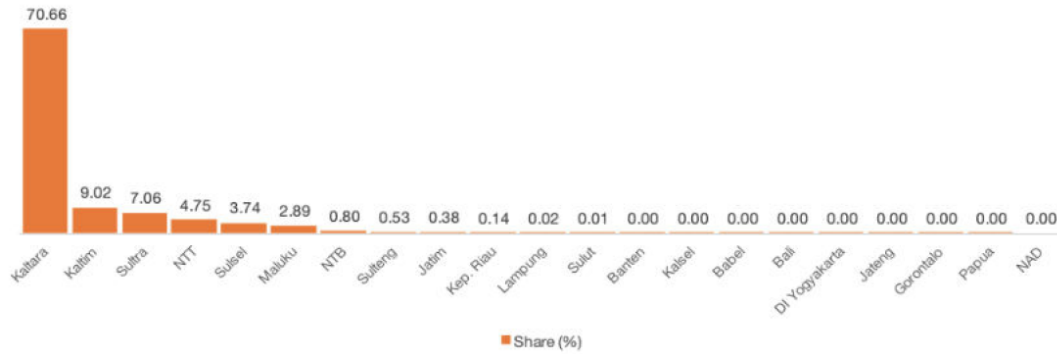


Figure 4: Share of the Domestic Volume of Seaweed Exported by Province in 2017.

Source: (BKIPM 2017).

shortcomings. This is necessary because the amount of information on online media, especially on social network sites (SNSs), continues to grow rapidly in various regions of the world (eMarketer 2012, 2013). In addition, it is also necessary to identify the government policy that can improve the law that has been issued or a policy that can be established relating to the digital economy. Sri Adiningsih, as chair of the Presidential Advisory Council (Watimpres), gave support to the government of South Sulawesi Province to develop the digital economy, especially in the outermost, disadvantaged and leading regions (3T) (Antara 2019).

The third stage is evaluating the opportunities possessed by an organization or a district. The opportunity that the Bulukumba district has to cultivate seaweed is very large for several reasons. First, seaweed is one of the leading commodities of the fishery and marine sector in South Sulawesi Province and the Bulukumba district. Indonesia engages in seaweed production throughout the year because Indonesia has a potential amount of cultivated land of approximately 1.11 million hectares (BKIPM 2017). The type of seaweed generally produced by Indonesia is *E. Cottonii*. In addition, China does not produce this type. *E. Cottonii* is only produced by Indonesia and the Philippines in Asia. Indonesia is one of the countries that exports dried *E. Cottonii* seaweed at the international level (BKIPM 2017). The global export volume of dried seaweed in 2014 based on 2015 UN Comtrade data was approximately 169.64 thousand tonnes, and approximately 70.01 percent came from Indonesia. Regarding other countries, China supplies 55.42%, Japan supplies 14.04%, Korea supplies approximately 6.11%, France supplies 4.70% and the USA supplies approximately 3.06%. Based on these data, Indonesia is one of the seaweed supply countries in the international market. Moreover, the seaweed volume traded in the provinces in Indonesia was

approximately 29.53% per year from 2014 to 2017. The total seaweed traffic increased by approximately 80.20%, which was approximately 52,034,702 kg in 2017. Dry seaweed products were the most popular type of seaweed product traffic in 2017, which was approximately 99.86%, followed by wet seaweed and processed seaweed (BKIPM 2017). The seaweed production traffic in 2017 was approximately 52,034,702 kg (BKIPM 2017). The largest seaweed exporting provinces are North Kalimantan Province at 70.66%, East Kalimantan at 9.02%, North Sulawesi at 7.06%, East Nusa Tenggara at 4.75% and South Sulawesi at 3.74% (BKIPM 2017). The figure above provides an overview of the share of the domestic volume of seaweed by the province in 2017.

The provinces that were the largest seaweed importers in 2017 were East Java Province at 54,82%, South Sulawesi at approximately 40,66%, DKI Jakarta at 3,42%, Maluku at 0,41% and North Kalimantan at 0,24% (BKIPM 2017). The figure below is a graphic of the share of the domestic volume of seaweed imported by the province in 2017.

Based on the BKIPM data in 2018, 58.01% of the seaweed of North Kalimantan Province was sent to East Java, and 41.61% was sent to South Sulawesi Province. Then, 78.65% of the seaweed from East Kalimantan Province was sent to South Sulawesi Province, and 14.59% was sent to East Java Province. Most (99.80%) of the seaweed from North Sulawesi Province was sent to South Sulawesi Province, and 96.98% of the seaweed from East Nusa Tenggara Province was sent to East Java Province. Most (73.61%) of the seaweed from South Sulawesi Province was sent to DKI Jakarta, and 23.98% was sent to

East Java Province (BKIPM 2017). These data provide information on the opportunities of South

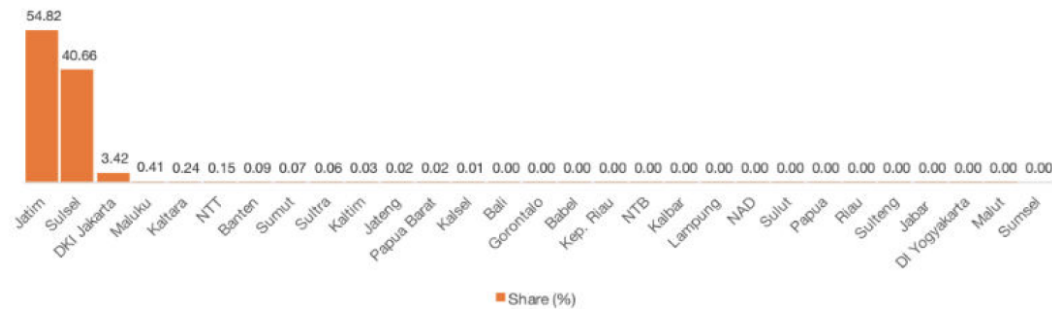


Figure 5: Share of the Domestic Volume of Seaweed Imported in 2017 Based on Province.

Source: (BKIPM 2017).

Sulawesi Province to cultivate very large amounts of seaweed. In addition, the production technology used to cultivate seaweed is relatively inexpensive and easy to obtain. Furthermore, seaweed has a relatively short period of maintenance of approximately 45 days or approximately 5-7 cycles a year. The price of seaweed in the local market is also adequate to improve family life. To support opportunities in the fishery and marine sector, especially seaweed cultivation, the role of online media is very strategic because the number of consumers, especially young adults, who use social network sites (SNSs) continue to increase (Stutzman, Gross, and Acquisti 2013). Online media application activities are generally conducted using smartphones because smartphones are one of the technologies that can be used in any situation (Alfawareh and Jusoh 2017). The opportunity for a seaweed farmer to use a smartphone in marketing seaweed products is significant because there are many social media applications on smartphones such as YouTube, WhatsApp, Wikipedia, Twitter, Facebook, Instagram, Telegram, and e-mail. In addition to using social networking sites (SNSs), seaweed farmers can also obtain opportunities through advertising on TV. The benefits of combining SNSs and TV to promote seaweed, commonly known as cross-media campaigns, have been studied by several researchers in their research (Chang and Thorson 2004; Tang, Newton, and Wang 2007; Voorveld and van Noort 2014; Voorveld, Neijens, and Smit 2011); and the results show that the approach produces a synergy that can build more productive cooperative relationships between consumers and seaweed farmers. In addition, community skills, especially those of women processing seaweed into a snack, are very limited. Therefore, community skills in processing seaweed must also be improved, especially for women processing seaweed into a snack (Seniwati *et al.* 2019). Increasing women's skills in supporting family economic welfare and skills in using online social

media is one way to support the improvement of a region's economy.

The last step is to analyze the threats so that they can be minimized. One way to minimize threats is to combine online media use or cross-media campaigns in marketing. Cross-media campaigns are expected to create a synergy that can motivate seaweed farmers to be creative. Synergy can also be created from Integrated Marketing Communication (IMC) (Schultz, Kim, and Kang 2014). IMC will create synergy so that seaweed marketing message communication can reach all marketing channels. This message must be consistent and organized so that it has a good effect on consumers. IMC's strategy in minimizing threats to seaweed businesses includes delivering focused and consistent messages regarding seaweed products through online media. The second IMC strategy is the provision of distinctive features for seaweed products. The seaweed products in an area have characteristics that distinguish them from the seaweed products in other regions. These products are characterized by their logos, taste, and content delivered through online media.

6. CONCLUSION

The benefit of using the economic-social shaping of technology (ESST) approach through SWOT analysis in this study is that the study combines four factors to support the strength possessed by the Bulukumba district as one of the districts that produce large quantities of seaweed. Another strength found in this study is that seaweed cultivation has a positive impact on the socioeconomic. Furthermore, several seaweed farming groups in the Bulukumba district have weaknesses, namely, the skill in mastering technology, especially online media, is still low. Nevertheless, the opportunities that seaweed farmers possess in the district are large because there is a pattern of

cooperation between the seaweed farmers. In addition, people who do not know about using technology, especially the use of online media, can be a threat. Another threat is the low desire of young people to cultivate seaweed. Furthermore, extreme weather is also an annual threat and problem faced by the Bulukumba district. Merging these four factors can support the economy of coastal communities so that their welfare can be increased. Increasing community skills in using online social media is one conflict resolution method.

7. LIMITATIONS AND FUTURE RESEARCH

This research did not explain the aspects of the foreign trade of seaweed. These aspects are important because, through them, we can determine the map of Indonesia's seaweed trade in the global market at Southeast Asia, Asia and global levels. Future research is important to explain the problems faced by Indonesia in increasing exported processed seaweed product. Opportunities and challenges are also important to study in the future. Specifically, future studies will discuss Indonesian government policies that aim to increase the productivity of processed products.

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