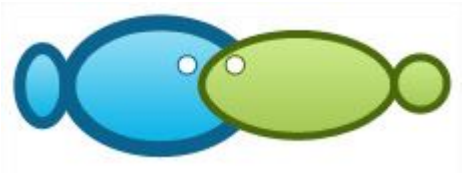

Abalone marketing and its performance during Covid-19 pandemic

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Abstract. This study aims to analyze the abalone marketing in Buton Island and its performance during the Covid-19 pandemic. Abalone is one of Indonesian marine resources with great potential to be developed. The high demand for abalone is usually not met with enough supplies, resulting in its expensive price. Sources are scattered and in remote locations, creating the need for marketing institutions. The study took place in Bajo Bahari village (Buton regency) and Baubau (a city in Southeast Sulawesi), Indonesia. The data was initially collected in February to May 2015, and later in March 2020 when the Covid-19 pandemic hit. The study consists of all 30 Bajo Bahari abalone fishermen. Additionally, 5 abalone merchants were chosen using snowball sampling method; which consists of 3 village abalone collector (VAC) and 2 wholesalers who act as the inter-island abalone trader (IAT). The abalone marketing performance was analyzed through the marketing margin and the fishermen's share, by first identifying the marketing channels. Results show two marketing channels were created, channel I (fishermen as producers→VAC→IAT) and channel II (fishermen as producers→IAT). Channel II showed better performance compared to channel I. Channel II had lower marketing margin (IDR 58,333) and high fishermen's share, 72%. In contrast, channel I showed higher marketing margin (IDR 127,778) and low fishermen's share, 16%. The Covid-19 pandemic poses challenges to the local abalone marketing, where fishing activities are stopped and disrupted the overall abalone marketing in Buton Island.
Key Words: abalone, marketing channel, marketing performance, Covid-19 pandemic.

Introduction. Abalone is part of the Indonesian marine biota which has high potential in the market. It has high economic value with an increasing demand, and is expected to play part in the economy, especially of the coastal communities (Setyono 2007; Andriyanto & Listyanto 2010; Rimmer 2010; Purwaningsih et al 2013; Adimulya et al 2016; Tubalawony et al 2016; Loekman et al 2017; Sososutiksno & Gasperz 2017; Sari et al 2017). The sea molluscs are called “lapas”, “sobra-sobra”, or “Kapinan” in the Philippines (Gallardo & Salayo 2003). In Indonesia, they are also known as “kerang mata tujuh” (translated to "7-eyed shell", from having 7 open pores), “siput lapar kenyang” (Dharma 1988; Setyono 2004), or “bia telinga” (translated to "ear shell", from its resemblance with an ear) as known by the Moluccans (Setyono 2004; Tubalawony et al 2016). They are commonly found in the coastal waters of Eastern Indonesia (Setyono 2004); for example, Bali, West Nusa Tenggara, South Sulawesi, and Southeast Sulawesi (Tubalawony et al 2016).

The global demand for abalone is on the rise (O’omolo et al 2003; Setyono 2004; Estes et al 2005; Setyono 2006; Cook 2014; Sososutiksno & Gasperz 2017; Hossain &

Chowdhury 2019). That demand was largely met by wild-caught abalone (O'omolo et al 2003; Purwaningsih et al 2013). However, the strong demand in the last two decades had shifted the global production to farmed abalone, especially in Asia; with China being the main producer and consumer of abalone. Some other major abalone producers are Chile, Japan, South Africa, Australia, Taiwan, New Zealand, Mexico, Thailand, dan the Philippines (Cook 2014).

As an exotic commodity (Susanto et al 2010), abalone has high market value (Setyono 2004; Kim et al 2014), particularly in developed countries (Tubalawony et al 2016). Some also considered abalone as prestigious food (Sofyan et al 2005). For instance, a portion of abalone served by a restaurant in an upscale hotel in Jakarta, Indonesia, costs around 1,5 million IDR (Anonymous 2006 in Susanto et al 2010) or just over 100 USD. The price is higher than that of other types of shells. This is partly due to the nutritional values that it offers. In addition to having rich flavour, abalone are also high in protein, low in fat, contain additional nutrients, and are even believed to have medicinal properties by the people in China and Japan (Gallardo & Salayo 2003; Setyono 2004; Suwignyo et al 2005). It is also believed to boost vitality and has low cholesterol (Sarifin et al 2011). The protein in its raw form reaches 60.79% (Sari et al 2017); while Tahang et al (2006) described abalone's nutritional contents as 71.99% protein, 3.20% fat, 5.60% fiber, and 11.11% ash.

Abalone are herbivores which diet is mainly macro algae (red, brown, and green) (Gallardo & Salayo 2003; Susanto et al 2010; Purwaningsih et al 2013) and micro algae (Setyono 2004). It is commonly served raw and fresh, cooked, frozen, or canned for export (Gallardo & Salayo 2003; O'omolo et al 2003; Tubalawony et al 2016). Additionally, the shells of abalone can be used to make jewelry (Suwignyo et al 2005).

Based on the information given by a fishmonger in Bungin Island, West Sumbawa, the price of abalone in domestic market reached IDR 300,000 kg^{-1} (around 15 pieces) (Hamzah et al 2012). The high price as well as the growing demand (Setyono 2006) indicate that abalone industry has good potentials because of the high economic value (Gallardo & Salayo 2003; Fermin et al 2009; Andriyanto & Listyanto 2010; Susanto et al 2010). One of the issues, however, is the distance from the abalone fishing sites to the marketplace. This creates the need for middlemen.

In general, there are only a few studies related to the marketing of abalone; as opposed to the studies on the other aspects of abalone. Some of the existing research are related to the economic aspects, profits, and marketing of abalone (Freeman 2001; Cook & Gordon 2010; Cook 2014; Hartman et al 2015; Cook 2016; Adimulya et al 2016; Tubalawony et al 2016; Sososutiksno & Gasperz 2017; Hossain & Chowdhury 2019).

Recently, coronavirus hit the world and took its toll on the abalone industry as well. The global pandemic has affected the supply side, the demand side, or even both. Presumably, the primary literature in how Covid-19 affects the marketing of abalone is still scarce. This is due to the novelty of the pandemic, which first case took place in China, the world leading producer and consumer of abalone. Thus, it is necessary to analyze the abalone marketing and its performance prior to and during the Covid-19 pandemic. More specifically, this study will analyze (1) abalone's marketing channels, (2) abalone's marketing margin, and (3) the fishermen's share from the price paid by the wholesaler.

Material and Method

Description of sample and duration of the study. This research took place in Bajo Bahari village (Buton District) and Baubau city, both in Southeast Sulawesi. The sample is all 30 abalone fishermen in Bajo Bahari. Other participants in this study are 3 gatherers (village abalone collectors or VAC) and 2 wholesalers (inter-island abalone traders or IAT); all were chosen using snowball sampling technique. In this study, the fishermen are regarded as the producer in Bajo Bahari village, the VAC as gatherers, while the wholesalers (IAT) are viewed as the end consumers. These wholesalers reside in Baubau. Bajo Bahari village is approximately 20 km away from Pasarwajo, the central

city of Buton district; and is around 70 km from Baubau, the local center of abalone market. The first data collection was done in February 2015, while the latest data was collected from 2-6 May, 2020, when the Covid-19 pandemic had hit globally.

Data analysis. Unit analysis of this study is the fishermen and the merchants. Market performance is analysed through the marketing margin, marketing institution's profit, and the fishermen's share from the amount paid by the wholesalers.

a) *Marketing margin*. Total marketing margin is the difference between the amount received by the fishermen and the amount paid by the wholesalers. Margin is also the sum of marketing margins from each marketing stage in a marketing channel. The marketing margin is calculated using the method used by Surni (2015) as follows: $M = Pr - Pf$ ..... (1)
where M is the total marketing margin (IDR kg^{-1}); Pr is wholesaler price (IDR kg^{-1}); and Pf is fisherman price (IDR kg^{-1}).

b) *Fishermen's share*. This is the proportion of the amount received by the fishermen from the price paid by the end consumer which, in this case, is the wholesaler. The formula used here is the one in (1) with some adjustment made to the one used by Surni (2015). The formula is as follows: $SPf = Pf/ Pr * 100\ \%$ ..... (2)
where SPf is the fishermen's share (%); Pf is fishermen price (IDR kg^{-1}); and Pr is wholesaler price (IDR kg^{-1}).

Results and Discussion. The abalone fishermen are Bajonese who reside in a floating village. At high tide, the houses look like they are floating on the water. Most of the people earn a living as fishermen. The sea is essential to Bajonese people, that they deem it as their “mother”. Tahara (2013) mentioned that they had been known as tough sailors. They have a long history as suppliers of various international commodities, one of which is abalone.

All daily activities of the Bajonese in this village are carried out above the water. A small motor-driven traditional boat was the main mode of transportation to reach the village. However in 2015, a road was built by the government to connect Bajo Bahari village with the mainland; it was then paved with blacktop in 2019. According to the village headman, this road has given an easier access for the people to distribute their abalone products. It gives them more distribution means, as opposed to transporting the abalone only by boat.

Market performance is the end result derived from all the adjustments made by marketing institutions. It is important to identify the marketing channels in order to determine what market adjustments that the institutions have made in the market. Through identifying the marketing channels, market performance is then analyzed based on the changes in price, marketing costs, marketing margin, marketing profit distribution, and the fishermen's share.

Marketing channels. Marketing channel is the ways in which products are distributed from producers to the consumers. Marketers use distribution channels to make goods or services available for the consumers. Distribution channel includes distributor, wholesaler, retailer, and agent (Kotler & Keller 2009). The fishermen sourced the abalone by diving. Since the sea is one of the commons, where everyone in the society can access it, it led to a decline in the stock of abalone. Additionally, the size of the abalone keeps decreasing, with fishing area getting farther and farther from the coast.

Figure 1 shows a simple marketing channel of abalone from the fishermen to wholesalers as the end consumers. Channel I, the longest channel, only involves 3 participants: fishermen-gatherer-wholesaler. In Channel II, the fishermen sell their products directly to the wholesaler: fishermen-wholesaler.

Bajo fishermen have always been fishing, but the locations, duration, and the amount of catch might differ. There are noticeable tendencies in choosing the marketing channel for their products. In the peak season, where wild abalones are abundant and the catch is at its highest amount, the fishermen will fall into 2 categories: fishermen who choose channel I, and those who choose channel II. The first channel

(fishermen→VAC→IAT) is the most popular option. Approximately 81.82% of the fishermen choose channel I, where they sell their fresh products to the gatherers (VAC). Note that channel I is created both in peak and off-peak seasons.

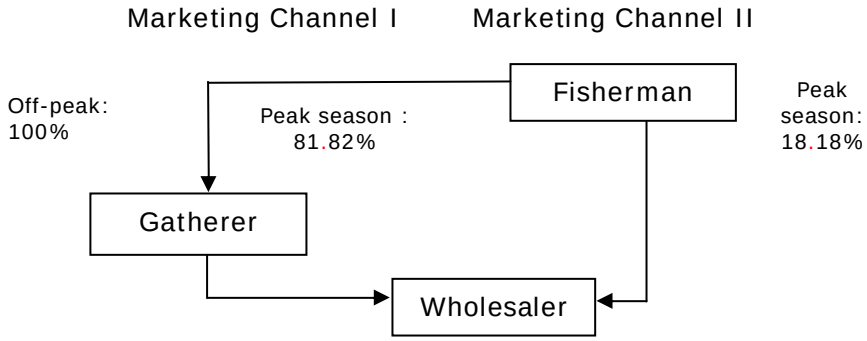

Figure 1. Marketing channels of abalone.

The peak season usually occurs in July-September. During that time, east monsoon causes high tide with furthest sea receding level, resulting in longer time needed to fish for abalone compared to other season. It is dry season, the best time of the year for sellers to sun-dry the abalone. The VAC would boil the fresh abalone they purchased from the fishermen and dry them. Afterward, they would sell the dried abalone to the wholesaler.

The second category is the 18.18% of the fishermen who choose channel II, where they process their abalone and sell the dried products directly to the wholesaler (fishermen→IAT). This direct distribution is only opted for during peak season. In off-peak season, 100% fishermen would choose marketing channel I. During this season, the fishermen couldn't catch much abalone from each hunt (only around 3 to 5 pieces). It could take a long time (1 to 3 months) to reach certain amount to sell (e.g. 1 kg), thus the tendency to sell the products to the gatherers instead of directly processing and selling the products to the wholesalers.

Pricing. The pricing is based on the size of the abalone caught by the fishermen. Information on the standard abalone price based on the shell's length is provided in Table 1.

Table 1

Standar price of abalone based on shell's length

No.	*Shell length (cm)*	*Price (IDR per individual abalone)*
1	7	2,500
2	5-7	1,000
3	3-5	500

The standard above was made by the VAC, and it encourages the fishermen to only catch abalone that fit into the criteria (at least 3 cm long). The fishermen normally wouldn't fish for abalone with less than 3 cm length, since the VCA wouldn't buy it. This promotes sustainability on the abalone resources in nature.

The abalone which was examined during the study was medium-sized (5-7 cm) and small-sized (3-5 cm). In average, 5-7 cm sized abalone weighs 40 gram, while the 3-5 cm sized abalone weighs 20 gram. To reach 1 kg of fresh abalone, it takes approximately 25 pieces of 5-7 cm sized abalone, or 50 pieces of small-sized (3-5 cm) abalone.

The fishermen have no power to determine the pricing. This is due to unstable supply that relies solely on wild-caught abalone. Those fishermen are not unified into any sort of organization and therefore, individually, they don't have any power in pricing.

In the transaction between VAC and IAT, the pricing standard is set by IAT. According to IAT, the pricing is based on the color, size, doneness and dryness of the

abalone. The IAT set the highest price for products that are clean and bright yellow, big in size, well-done and properly dried. In reality, the products sold by VAC do not quite meet these standard; the abalone are a bit dark, irregular in size, not well-done, and not perfectly dried.

This study shows that the average price of fresh abalone on the fishermen level is IDR 25,000 kg^{-1}, while the dry abalone price on the VAC level is IDR 150,000 kg^{-1}, and IDR 250,000 kg^{-1} on IAT level. Adimulya et al (2016) found that the price of wet abalone on fishermen level is IDR 55,000 kg^{-1}; dry abalone on VAC level is IDR 250,000 kg^{-1} and IDR 500,000 kg^{-1} on IAT level. The assessed price is apt to fluctuate, with a tendency to decrease. It dropped to an even lower point in the early 2020 when Covid-19 started to hit more countries around the world. This is due to the decline in global demand, which compromised the overall abalone marketing activities. One of the respondents, a wholesaler in Baubau, mentioned that they purchased dry abalone from gatherer only once this year, back in January. The gatherer delivered the dry abalone, which they bought for IDR 250,000 kg^{-1} (the currency was: 1 USD = around IDR 13,655).

Marketing margin. Marketing margin is the difference between the amount paid by the consumers and the amount received by the fishermen. The components of marketing margin are: the cost paid by the marketing institution to do marketing functions, and the profit. More details on the purchase and selling price, marketing institution cost, and fishermen's share of the price in marketing channel I and II are provided on Tables 2 and 3 respectively.

Table 2

Cost, profit, margin and fishermen share on marketing channel I

Market players	*Description*	*Price (IDR kg^{-1})*	*Profit-cost ratio*	*Fishermen share (%)*
Fishermen (F)	Selling price	25,000.00	4.32	16
Gatherer (G)	Purchase price	25,000.00		
	Marketing cost	17,222.23		
	Selling price	116,666.67		
	Profit	74,444.44		
	Margin F-G	91,666.67		
Wholesaler (W)	Purchase price	116,666,67	4.44	
	Marketing cost	6,639.38		
	Selling price	152,777.78		
	Profit	29,471.73		
	Margin G-W	36,111.11		
	Total margin F-W	217,857.14		

Table 3

Cost, profit, margin and fishermen share on marketing channel II

Market players	*Description*	*Price (IDR Kg^{-1})*	*Profit-cost ratio*	*Fishermen share (%)*
Fishermen (F)	Marketing cost	22,142,86	5.77	72
	Selling price	150,000.00		
	Profit	127,857.14		
Wholesaler (W)	Purchase price	150,000.00	5.44	
	Marketing cost	9,053.67		
	Selling price	208,333.33		
	Profit	49,276.66		
	Marketing margin	58,333.33		

Marketing channel I involves 3 marketing institutions, which are fishermen, gatherer, and wholesaler. The marketing margin between gatherer and fishermen is IDR 91,666.67 per 777.78 gram of dry abalone, while the marketing margin between wholesaler and gatherer is IDR 36,111.11. In channel I, the fishermen sell their pro-ducts as it is, fresh

wet abalone. The gatherer would need to spend more time, energy and cost to achieve ideal products needed by the consumers, which is dry abalone.

In marketing channel II, only 2 institutions are involved: fishermen and wholesaler. The marketing margin is IDR 58,333.33. Compared to the margin in channel I (IDR 217,857.14), it is apparent that the length of a marketing channel affects the value of the marketing margin of a product. The shorter the marketing channel, the smaller the marketing margin is. This is because less actors are involved, which causes less needs for cost and profit. Therefore, marketing channel II is more efficient compared to channel I.

The marketing costs in both channels are different. In channel I, marketing cost is calculated from 1 kg of fresh abalone purchased from fishermen for IDR 25,000. After being processed by the gatherer, the result is dry abalone that weighed 777.78 gram. Meanwhile in channel II, the fishermen process the freshly caught abalone by themselves. Therefore, the marketing cost to produce 777.78 gram of dry abalone in channel I is smaller than that of channel II to produce 1 kg of dry abalone.

In terms of profit to cost ratio, both channels are performing well. This indicates that abalone marketing is a prolific business activity with good potentials, since it gives four to fivefold return on the initial cost. This is in line with the studies conducted by Sososutiksno & Gasperz (2017) and Tubalawony et al (2016).

Marketing channel II only involves fishermen and wholesaler. This channel is only opted for during peak season (July-September). In this season, 18.18% of the fishermen fish for abalone, process them into dried abalone, and sell them to the wholesaler (IAT). The marketing margin of channel II is IDR 58,333.

Channel I has bigger marketing margin due to marketing cost the gatherer (VAC) needs to pay to buy fresh abalone. Gatherer really considers this cost because they realize that abalone price tend to fluctuate. The supply heavily relies on its availability in nature, which therefore needs a long collecting time (up to 3 months) to reach certain amount to sell. Additionally, gatherer also considers the abalone body mass shrinkage from wet to dry final product. Another aspect in consideration is the potentially lower quality of the final product resulting from longer storage duration without adequate storage process. This is evident from the pale color in some of the dried abalone, which would significantly reduce their price in wholesaler level.

The big amount of marketing margin on the IAT level in channel I is also due to the risk of products shrinkage and damage. Abalone bought from the gatherer need to be re-dried to minimize water content in the meat as to stop any microorganisms and enzymes activities. Note that fresh abalone has 83.9% water content (Namisato 1974), and to reach the ideal dry state, it needs to lose 55% of the water content. Normally the wholesaler, as the end consumer in this study, needs to re-dry the abalone because the gatherer did not dry it properly. This process resulted in up to 30% of product's mass loss.

The marketing margin in channel II between fishermen and IAT is IDR 58,333.33. In this channel, fishermen produce the final products that the wholesaler needs, which is dried abalone. The fishermen did not need to spend cost to buy the fresh products, therefore their profit share is bigger than that of channel I.

Fishermen's share. It is the portion of price that the fishermen, as the producer, received from the amount paid by wholesaler. The higher the fishermen's share, the more efficient a marketing process is (Surni 2015). Fishermen's share in channel I is 16%. It shows that the fishermen get less portion of the price compared to the gatherer and the wholesaler. The low fishermen's share and high marketing margin shows that the marketing channel is not efficient.

Dried abalone is the products desired by the end consumers. The fishermen mainly offer fresh, wet abalone. To bridge the two, the gatherer and the wholesaler need to process the fresh abalone into dried ones. In this marketing scenario, the fishermen only perform selling function, thus have no additional cost and marketing risks.

The fishermen's share in channel II is 72%. It's apparent that the fishermen receive larger portion of price compared to the IAT. In this channel, the fishermen sell the dried abalone directly to IAT, removing gatherer from the equation, thus receiving higher price. In this scenario, the fishermen not only sell but also perform processing

function. This costs them additional fee. However, it is marginal compared to the profit that they receive. As stated by Tubalawony et al (2016), the highest fishermen's share would be achieved when they sell their products directly to the wholesaler. The shorter the marketing chain, the bigger the fishermen's share, the better it is to cover their cost of operation.

Abalone marketing in the time of Covid-19 pandemic. It is interesting to discuss about the performance of abalone marketing amid the shock that the pandemic brings. Abalone is normally considered as a luxury marine commodity which only people of specific social class can enjoy. On the other hand, it also poses the uncertainty of product marketing, in which no one can definitively predict the outcome. Most of the profit that was initially expected seems like a mirage now that the virus has taken over the world, starting from Hubei Province in January 2020. It crippled the world economy, including the performance and the sustainability of abalone marketing.

Indonesia relies heavily on wild caught abalone. When the nation announced the pandemic, the abalone marketing activity in the research location was also affected. The wholesaler in Baubau mentioned that the abalone sales and price hit rock bottom. This is due to the plummeting demand from China, the world leading abalone consumer. In line with this, Raharjo & Djailani (2020) also stated that the current fall in food price is not caused by supply aspect, but rather the declining demand.

As discussed earlier, China is the main center of abalone marketing globally, since it is both the world leading producer and consumer (Cook 2016). As a country with the largest population, China consumes the majority of global abalone commodity. Each year, China produces its own 1,000 metric ton abalone from around 300 large scale commercial farms. Some of the newer farms are among the most efficient in the world (Cook & Gordon 2010). In addition to that domestic production, China imports abalone from other countries including Australia, which exports 90% of its abalone products to China (Spence 2020).

Apart from the lack of demand, abalone marketing activities are also affected by the lack of supply. Many of the abalone fisheries halt their business. People are mainly staying at home in response to the government policies and the growing concern towards the virus itself. This results in the shortage of abalone supply. This, together with the plummeting demand from the market, has caused the price to fall. The fishermen and the exporters are among those who are directly impacted by this situation. Sluggish sales means more cost needed to store the abalone longer. Processed and preserved abalone products are not affected by this situation. Fresh abalone, however, is badly impacted. De Greef (2020) found that in South Africa, more than 1 ton of fresh abalone have gone to waste due to low sales.

Based on phone interviews with Bajo Bahari village head, the fishermen stopped fishing for abalone since the wholesaler stopped buying. As mentioned earlier, high price is what mainly drives the fishermen to go all the way to catch abalone. Now they are staying at home due to the restriction, and also out of the fear of catching the virus. Even worse when a fellow fisherman got a high fever and passed away after heading out to the sea.

Since the demand from China started to decline since January 2020, the exporters bought less abalone from the wholesalers. The wholesalers stated that this is because China was in lockdown. The decreasing demand from abalone exporter in Surabaya forced the wholesaler in Baubau to reduce the price to IDR 250,000 kg^{-1} or roughly US $ 18 in January 2020 (1 US $ = around IDR 13,882.5) [compared to higher abalone price during global crisis, which was US $ 30 kg^{-1} (Cook 2014)]. This was the last purchase of abalone supply made by the wholesaler in 2020. These last products were not even from the study location, Bajo Bahari. They purchased from the gatherers who collected the abalone from other regions, since the fishermen in Bajo Bahari and neighboring villages did not produce any more product from January 2020 onwards. The low price had demotivated the abalone fishermen.

The plunging abalone price affects all parts of the marketing activity. In the study location, the fishermen stopped fishing for abalone. The gatherers also stopped their

marketing activity due to no product available for purchase. Another contributing factor is the closing of the borders between Buton regency and Baubau city, which makes it impossible to distribute abalone to the wholesalers in Baubau. This disrupted the domestic inter-island trades. This also happened in Africa (Monitor Team 2020), where the halt in export market forces the exporters to stop purchasing seafood products. Altogether, all things mentioned above have impacted the global abalone trade.

Simultaneously, the consumer side is also affected by the pandemic. The lockdown and social/physical distancing policy force the consumers to not leave their houses for shopping or recreational purposes. Many public venues, including restaurants and hotels that usually serve abalone in their menu, are closed to public (Marshall 2020). In Australia, the abalone industry witnessed a 70% drop in sales since consumers stopped eating at restaurants (Hogan 2020).

Some companies still have some abalone stock left, but distributing products to the consumers remains an issue. Not to mention the means of distribution itself. Due to the Covid-19 pandemic, most countries suspended almost all of their flights, resulting in more than triple increase in transportation costs (Spence 2020). China's lockdown has even wrecked the abalone market in South Africa like never before (Carrie 2020). The abalone marketing around the world is facing its greatest challenge now, since both producers and consumers are unable to have any transaction. More specifically, Knight et al (2020) stated that the stability of global market for small-scale fisheries is totally unknown. Coronavirus could even pose a long term risk (Marshall 2020). The uncertainties were never this big for abalone market.

Conclusions. This study concluded 3 findings. Firstly, there are two marketing channels applied in the research location, which are channel I (fishermen → VAC → IAT) and channel II (fishermen → IAT). Channel I is the most opted for. Secondly, based on the marketing margin and the fishermen's share, channel II shows greater efficiency compared to channel I, although this channel only occurred in peak season. Lastly, the Covid-19 pandemic has put a halt on the fishermen's activities and consequently caused setbacks for the overall abalone marketing, because of which it is now facing its greatest uncertainty.

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