INSTITUTIONAL AND MARKETING EFFICIENCIES OF DRAGON'S BLOOD MANAGEMENT IN BENGKULU PROVINCE, INDONESIA

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INSTITUTIONAL AND MARKETING EFFICIENCIES OF DRAGON'S BLOOD MANAGEMENT IN BENGKULU PROVINCE, INDONESIA. Dragon's blood is amongst non timber forest products in which its of supply depends on its natural availability and the demand of the commodity. This study discusses institutional market, value chains and marketing efficiency of dargon's blood. Primary and secondary data were collected by interview based on snowball sampling method. Data were analyzed descriptively and quantitatively. Institutional economics approach was used to determine institutional marketing of dragon's blood. Results show that the relations and behavior of marketing agents of dragon's blood will form an institutional marketing with patron-client system, because of unbalanced position in terms of economy, accessibility and information. There were four marketing channels that exist in the research area. All of these marketing channels of dragon's blood can be categorized as efficient marketing in which an average value of marketing efficiency were 17.86%. Channel 3 is the most efficient marketing channel with the smallest efficiency value of 12.86% and high farmer share (62.86%): penjernang – dragon's blood traders at the village level – urban merchants in the district level – wholesalers at the province level – exporter. This result indicates that the most efficient marketing channel was the channel where the collectors sell dragon's blood in the form of resin.

Keywords: Bengkulu Province, dragon's blood, local institutions, marketing efficiency

EFISIENSI KELEMBAGAAN DAN PEMASARAN ROTAN JERNANG DI PROVINSI BENGKULU, INDONESIA. Rotan jernang adalah salah satu hasil hutan bukan kayu (HHBK) dimana jumlah pasokannya tergantung pada ketersediaan alam dan permintaan pasar tidak dapat ditentukan. Penelitian ini bertujuan untuk mengetahui bagaimana kelembagaan, rantai nilai, dan efisiensi pemasaran rotan jernang. Data yang dikumpulkan adalah data primer dan sekunder yang dikumpulkan dengan metode snowball sampling dan wawancara. Selanjutnya, data dianalisis dengan metode deskriptif kuantitatif. Pendekatan ekonomi digunakan untuk mengetahui kelembagaan dari sistem pemasaran rotan jernang. Hasil penelitian menunjukkan bahwa hubungan dan perilaku pelaku pemasaran rotan jernang akan membentuk kelembagaan pemasaran dengan sistem patron-client, karena adanya ketidakseimbangan posisi dalam hal ekonomi, akses, dan informasi. Ada empat saluran pemasaran yang ada di wilayah penelitian. Keempatnya dapat dikategorikan efisien dimana nilai efisiensi pemasaran rata-ratanya adalah 17,86%. Rantai pemasaran yang paling efisien adalah saluran tiga dengan nilai efisiensi pemasaran terkecil yaitu 12,86% dan nilai farmer's share yang tinggi (62,86%), yaitu penjernang – pedagang tingkat desa – pedagang tingkat kabupaten – pedagang tingkat provinsi – eksportir. Hasil ini menunjukkan bahwa saluran pemasaran yang paling efisien adalah saluran yang menjual jernang dalam bentuk resin.

Kata kunci: Provinsi Bengkulu, rotan jernang, kelembagaan lokal, efisiensi pemasaran

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I. INTRODUCTION

Non Timber Forest Products (NTFPs) vary widely in tropical forests and provide important contribution to the economy of surrounding forest community (Abtew et al., 2012; Mukul, 2011; Rahman et al., 2012;). Evidences show that the NTFPs have significant role in improving profitability of small-scale private forest managed by community (Pettenella, Secco, & Maso, 2007). Dragon's blood is a deep red color resin powder produced by *Daemonorops* spp. and has long been used as medicine in various cultures. Dragon's blood is high economic value due to its scarcity, and the price is determined mostly by its color depth and beneficial chemical contents (Edward, De Oliveira, & Quye, 2001).

Internationally, dragon's blood has been used for pharmaceutical materials, such as anti cancer (Rasul et al., 2012; Yu et al., 2013), cureing diarrhea (Winarni, Sumadiwangsa, & Setyawan, 2004) and wound (Gupta, Bleakley, & Gupta, 2007), as well as mix compound in toothpaste (Baja-Lapis, 2009). Dragon blood is also used for cosmetics, to reduce cancer pain, to cure stomachache and digestive problems (Rustiami, Setyowati, & Kartawinata, 2004). Dragon's blood has also been used for centuries as coloring material of high value art work (Baumer & Dietemann, 2010). The benefits of dragon's blood have been increasing its demands for this product. China and Singapore were the main export destination for Indonesian dragon's blood but Indonesian dragon's blood can only supply about 6.7 % of China's market demand (Gafar, 2010).

NTFPs have ecological functions similar to timber forest products, which are important in supporting the overall forest ecosystem as well as one of the most important parts of sustainable forest management (Gafar, 2010; Gaoue et al., 2016; SijiMol et al., 2016, Sukwika et al., 2016). Economically, NTFPs contribute significant source of income for the people (Harbi et al., 2018), although the contribution to regional and national economy remains low. To date, the NTFPs are only considered as byproducts or minor forest products and less considered by the government. Non-tax revenue (PNBP) from timber was 2,980.02 billion IDR (89.25%) whereas non timber forest product was 350.11 billion IDR (10.75%) (Article 33 Indonesia, 2014). Instead of its low contribution to PNBP, production activities of collecting and processing NTFPs have been able to absorb labor in sufficient quantities, hence it could provide job opportunities and improve livelihoods of surrounding forests people. Compared with timber products, utilization of NTFPs usually require less capital and more simple technology. Furthermore, NTFPs have a great opportunity to support better sustainable forest management, since it only utilizes part of plant materials such as fruit, stems, flowers or leaves.

Collection of dragon's blood from the nature needs to be well managed. The product usually grows in shared (common pool) resource and good management could prevent unsustainable harvest by the free riders. This common-property resource has two main characteristics that cause free rider behavior (Feeny, Berkes, McCay, Acheson, & James, 1990). The first is excludability, which means that it will be very costly or even impossible to limit the access of other parties to these resources. Second is subtractability (rivalry), meaning that each person's consumption or harvest of resources will reduce the chances of other people using those resources. In other words, the use of resources by one person will reduce the availability of the resources for other users.

These free riders will not pay attention to the negative impact caused or suffered by the other party. Behavior of "common-dilemma" arises because the effect of competition on the behavior of the harvest (Birjulin et al., 1993). Individual will exploit more natural resources when there are more competitors. Whereas, in some cases collective resources management not only aims to protect those resources, but also the livelihoods of forest communities

(Tieguhong, Ingram, Mala, Ndoye, & Grouwels, 2015; Wiersum, Ingram, & Ros-Tonen, 2014).

The market of forest products, including timber forest products is different from the agricultural and plantation commodities, which tend to have more perfectly competitive market. Supply and demand of agriculture and plantation products almost available in large quantities, while for the NTFPs, the number of goods that offered depends on the availability in the nature and the demand much more difficult to determine. Some NTFPs have limited use and are export oriented as there is no processing industry in the country. This condition causes the domestic demand for NTFPs become limited and most of them are still taken from the forest and not yet cultivated. For example patchouli (*Pogostemon cablin* Benth.), one among the potential NTFP products to be developed - its market is only for export needs and the demand and prices are controlled by exporters. Likewise agarwood, the demand is still unknown and the supply depends on natural production as the quality and quantity of cultivated agarwood are still low.

NTFPs governance including management of forest resources, NTFP policies and institutions plays an important role in ensuring ecological sustainability and NTFP resources, NTFP trade, and how people benefit from NTFPs. Weak supervision and implementation of policies related to NTFPs such as inventory of potential and availability of NTFPs as well as the flow of NTFP values and markets often become problems in the NTFP management (Laird, Wynberg, & Mclain, 2011). The main obstacles in the utilization and management of some NTFP are the absence of clear institutional authority, uncertain markets, limited public access to the markets and lack of capital resulting bargaining position of some NTFPs and profit margin earned by the producers are low. This condition could be occurred on dragon's blood since the policies for this product, especially relating to commercialization and market are still unclear. Deeper understanding of institutional market, value chains and the marketing efficiency of dragon's blood is important in order to improve public access to the markets and support the commercialization of this NTFP. This paper studies institutional market, value chains and marketing efficiency of dragon's blood.

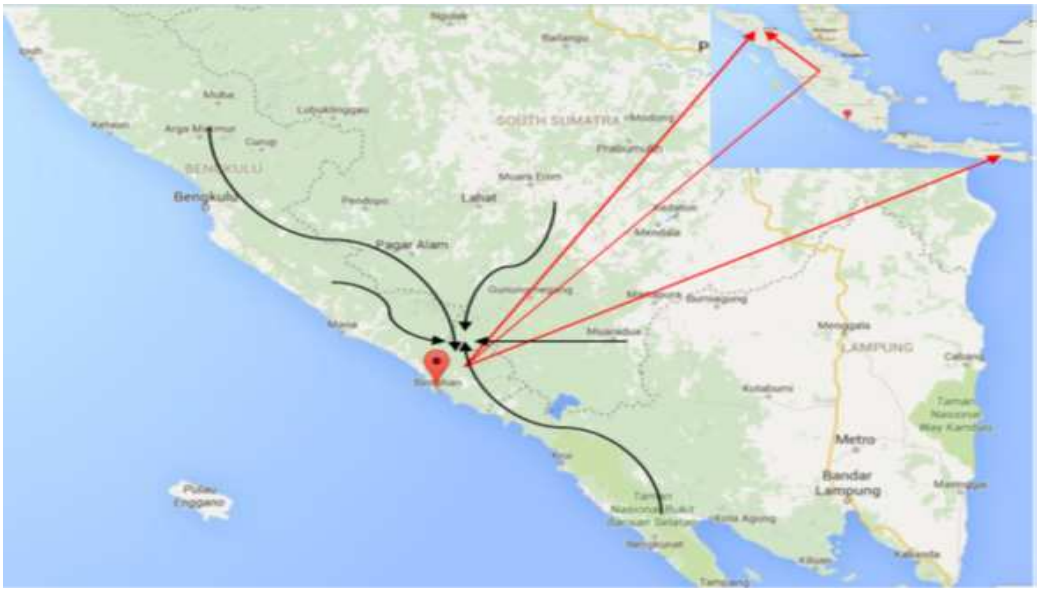

Figure 1. Map of the study area illustrating the marketing channels of dragon's bloods from Bengkulu to three main cities. i.e. Medan (a), Jambi (b) and Surabaya (c)

II. MATERIAL AND METHOD

A. Study Area

This study was conducted in South Bengkulu and Kaur Districts, Bengkulu Province, Indonesia. The research was conducted in October-November 2015. The research locations were chosen due to some considerations i.e. the districts are the center of commerce and processing of dragon's blood (flour/powder) in Bengkulu, especially in Southern Sumatera area. The community has already known well about dragon's blood and some of them become the traders of this product.

B. Analytical Approach and Data Collection

This study adopted value chain analysis to identify and mapping the marketing actors, identify the distribution of benefits of each actors, examine the value added and look at the role of governance in the value chain (Kaplinsky & Morris, 2001). Market performance was analyzed by economic institution approach (Schmid, 1987), i.e. through analyzing the structure of market channels and institution behavior. The structure of market is considered to determine the patterns of institution behavior. Additionally, patterns of institution behavior will affect the performance and will ultimately affect the market structure (Schmid, 1987). Marketing efficiency analysis was conducted using several indicators, such as marketing channels, market structure, marketing margin and the earnings of marketing actors.

Marketing margin consists of two components, namely marketing costs and benefits. Marketing margin of dragon's blood is marketing costs plus marketing profit. Marketing margin can be formulated by calculating the difference between the price at the consumer level with the prices at the producer level (Jumiati, Darwanto, Slamet, & Masyhuri, 2013). Anggraini, Hasyim, & Situmorang, (2013) revealed that the size of the marketing margin can be formulated by:

$$Mp = Pr - Pf \quad \text{..... (1)}$$

Where:
Mp = marketing margin
Pr = prices at the retail level
Pf = prices at the producer level

Furthermore, according to Hendarto and Wibowo (2005), the margins of the marketing chains are the amount of margin on every marketing chain, which is formulated by:

$$m_i = \sum_{i=1}^{n} M_i \quad \text{or} \quad m_i = \sum_{i=1}^{n} (P_i - P_{i-1}) \quad \text{..... (2)}$$

Where:

Mi = margins in the marketing chain at point i
Pi = price of the sale at the point of the marketing chain i
Pi-1 = price of the sale at the point of the marketing chain i-1
mi = total margin of the marketing chain

To specify the percentage of producer prices on consumer prices can be determined by calculating the farmer's share which can be defined by the formula:

$$FS = \frac{Pp}{Pc} \; x \; 100\% \quad \text{..... (3)}$$

Where:
Ps = Farmer's share
Pp = price at the producer level
Pc = price paid by the final consumer

The higher percentage values of farmer's share indicates more efficient marketing activities (Rosmawati, 2011). Farmer's share shows proportion received by farmers when they conduct marketing activities on commodity. Therefore, farmer's share have a negative correlation with the marketing margin, in which the higher marketing margins, the money that obtained by farmers will be lower (Setiorini, 2008). To calculate the marketing efficiency, the formula employed as follows:

$$Ep = \frac{Tb}{Tnp} \; x \; 100\% \quad \text{..... (4)}$$

Where:
EP = marketing efficiency

TB = total of marketing costs
TNP = total value of the product

Decision rules were implemented as shown in Table 1.

Tabel 1: Decision rules

Value	Description
0-33%	Efficient
34-67%	less efficient
68-100%	Inefficient

Source: Rosmawati (2011)

Data for inputs in the analysis was based on primary and secondary data. The primary data was collected by snowball interviews to selected respondents to identify actors that involved in marketing chains of the product, scope of actor activities, cost of each activities, prices at marketing points and the added value activities. Secondary data were obtained through literatures and other unpublished data. The number of respondents that have been interviewed can be seen in Table 2.

Table 2. Number of respondents for each marketing actors

No.	Category	Number of respondents (people)
1.	Penjernang (farmers)	15
2.	Village traders (gatherers and processors)	4
3.	Urban merchant at district level	4
4.	Wholeselers at province level	2
5.	Exportir	2

III. RESULT AND DISCUSSION

A. Marketing Chains and Actors Behaviours of Dragon's Blood

Dragon's blood as one of NTFPs has lots of benefits and its availability in the nature is limited. Until now, people just picked up dragon's blood from the forest and then sold to the collectors as source of additional income. So far, there are only a few of people who cultivate the dragon's blood. Institutional marketing activities of NTFPs have generally remained as traditional institutions and do not use written and clear rules. Moreover, relation among actors in marketing activity is usually very close in which they know each other and trust each other. The flow of goods (products) from producers to consumers raises the value chain in which activity can be separated and highly dependent on each other. Value chain of dragon's blood in the research sites involves multiple marketing actors. There are five actors that exist in the marketing of dragon's blood:

1. Collectors of Dragon's Blood from the Forest (*penjernang*)

Penjernang are people or farmers who collect dragon's blood from the forest. They collect this product from the forest and sell it to the buyer either in the form of fresh fruit or powder. *Penjernang* mostly comes from villages nearby the forest. *Penjernang* are producers of dragon's blood and transfer the products to village collectors and or processors.

2. Village Collectors and/or Processors (village traders)

Village traders collect dragon's blood from *penjernang*. They collect either fruits or powder. Some village traders only act as middlemen, i.e. buy and sell the dragon's blood without processing it. Some traders buy the fruits and proccess it to produce powder. There are more village traders with this second category as they will get more benefit from the added value process. Subsequently, village traders re-sell the products to urban merchants at district level.

3. District Collectors (urban merchants)

Urban merchants collect dragon's blood from village traders. They also process the resin to meet quality as specified by the exporters or final consumers. Urban merchants re-sell the products to wholesalers at province level. In some cases, urban merchants could also directly supply to exporters.

4. Province Collectors (wholesalers)

Wholesalers were exist at the province level. They collect dragon's blood from urban merchants within the districts.

5. Exporters

Exporters of dragon's blood are very limited and concentrated in Medan and Surabaya. They test the resin level and pack them to meet export quality standard. The exporters send the products to some destination countries, such as China and Singapore. Dragon's blood will be sent in the form of semi-finished goods. Resins that are exported to China will be inspected by the CFDA (China Food and Drug Administration), it will take approximately one week to be tested. After passing the test, the resin will enter the pharmaceutical company, and will be tested again before it is used. For exports, the minimum dracohodine content of jernang resin at least 1.5%, so that after the storage and testing, the draco content is still 1% or more. The standard demand from pharmaceutical companies in China is at least 1% of dracorhodin level.

Lack of capital; the presence of the parties who are in a better position of economy, information and access to other parties; inadequate ability and knowledge among *penjernang* as clients and village traders of dragon's blood at the village level, will lead to the institutional form of the patron-client system. Patron and client have an unbalanced bargaining position where the client as a subordinate has a lower bargaining position than the patron. Patron has the power of capital and information owned. Farmers as clients are usually given loans by collectors as patrons in the village to look for dragon's blood, hence the client has an obligation to sell their dragon's blood to patrons based on prices determined by the patron.

The pattern of this relation is intended to provide protection and security of subsistence to the client (Scott, 1976). Marketing actors will be interdependent with each other although the benefits received by each actor are not similar. The relation is not complementary but symbiotic (Stein, 1984). There are often imbalances positions among marketing actors. Information that is not balanced is theoretically considered as the cause of policy and market failures (Pindyck & Rubinfeld, 2001; Rahman, 2015). Moreover, imbalance information about dragon's blood market, less guidance from local government to increase and conserve dragon's blood business, and also dragon's blood price fluctuation due to some standard quality of dragon's blood that must be fulfill at farmers level become factors that cause low value added received by farmers as a client and give more benefit to the trader as a patron (Effendi & Rostiwati, 2014).

Patron client system could be mutually positive to both actors or exploitative. In the research location, the patron client relations were mostly exploitative. At the village level, village traders who have limited access to the capital and also to the exporters will act as the client while urban merchants and wholesalers who have big capital will act as a patron. *Penjernang* generally have low incomes, so that the village traders will offer some fund to *penjernang* with the obligation that *penjernang* must sell the results of dragon's blood to the village traders as the financiers. Hence, these village traders have a role as financiers and buyers for *penjernang*. On the other hand, Dragon's blood is increasingly limited, the distance to take it further into the forest, and the difficulty of its harvesting process in the forest causes the gatherers becomes important asset for village traders and processors of dragon's blood.

Village traders (gatherers and also processors of dragon's blood at the village level) and urban merchants at the district level are very limited. Consequently, *penjernang* do not have enough options to sell their product. Prices at the producer level often do not reflect the cost of production, hence the traders who always control the market price and determine the price (Neumann & Hirsch, 2000). There are negative consequences of this patron-client system due to the imbalance power among the actors and

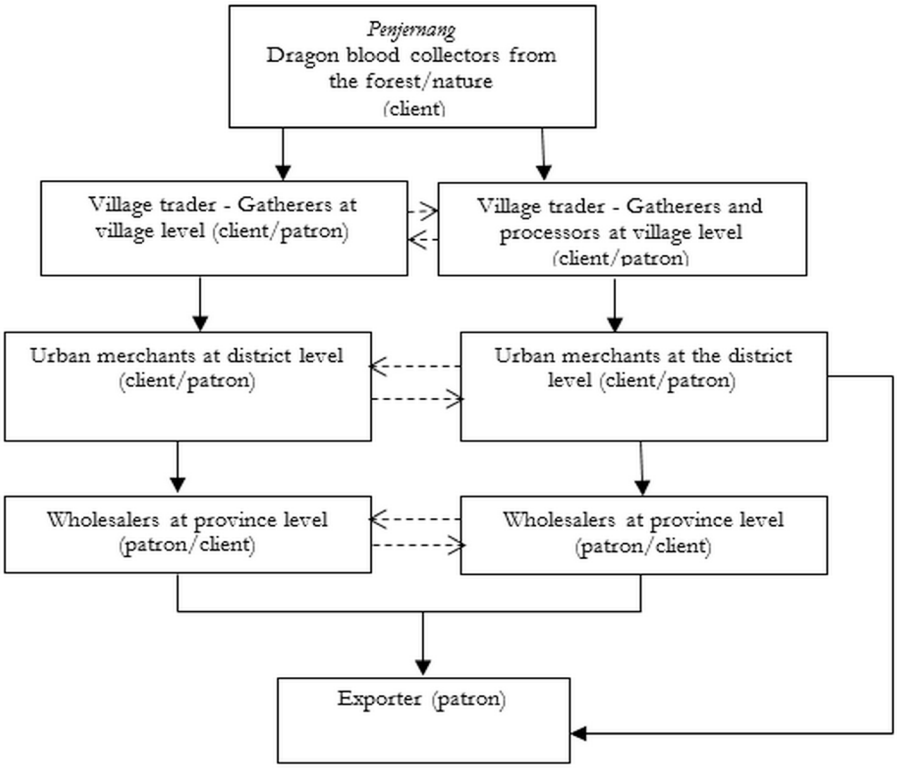

Figure 2. Performance of patron-client relation and value chain of dragon's blood marketing

the price taker behaviour of clients that may lead to exploitative marketing system and in the end will lead to unsustainable production system.

The final product traded in the value chain of dragon's blood is dragon's blood powder which is extracted from the fruit. The extraction technique done at the research location is dry method that uses special tool to spill the powder from the fruit. Dragon's blood powder quality is very diverse and already has the Indonesian National Standard (SNI) (Badan Standarisasi Nasional, 2010). To determine the quality of dragon's blood powder requires expertise and experience because it is quite difficult. The actors actually do not really know the precise quality of the resulting powder of dragon's blood. Only certain people could figure out how the quality of the dragon's blood powder.

Price and quality of dragon's blood were determined in the bid process by the sellers and buyers. There are several quality grades of the dragon blood and these grades determine the price. The grade is determined by simple and very subjective test, using fuel or methanol test, and usually done by the urban merchants and wholesalers. Strict tests were carried out on large size of the traded dragon's blood or if new village traders were enter the trade. This test was undertaken due to opportunistic behaviors of the village traders, where in some cases they mix the dragon blood resin of several grades to get the higher price. This cheating practice was intended to obtain bigger profit in the trade, but the risk the sellers could be put into a black list.

The position of patrons at district/province level (urban merchants and the wholesalers) was better than the clients (the village traders). The patrons have more freedom in determining the price and the intended profits. The patron-client relation of marketing actors in the value chain of dragon blood is illustrated in the Figure 2. The actors at the first level act as clients and the next higher level actor becomes patrons.

Figure 2 shows that patron-client relation exists between *penjernang* and village traders, village traders and urban merchants, urban merchants and wholesalers, and finally wholesalers and exporters. *Penjernang* has the position as a client of village traders or village trader becomes a patron of *penjernang*. This relation continuously goes on, up to the exporter level. Patron-client relation usually developed along continues transactions between the patron and clients that may involve long term credits and obligations, so that after certain time a personal bond may be formed between them (Kiss, 2014). Kiss (2014) revealed that the relations are mostly informal and never organized but typically infers long-term commitment of compulsory nature (Erbaugh et al., 2016). The higher the degree of compliance between client and patron the stronger the relation of them (Carney, 1989). *Penjernang* as clients of village traders will get some benefit from the patrons (village traders). The patrons share the information related to the product, buy the product, and sometimes give a loan to the clients. On the oher hand, the clients continuously supply the goods (dragon blood) to their patrons.

Penjernang picked fruit of dragon's blood in the forest around their dwelling or other areas that are the source of dragon's blood. Dragon's blood obtained will then be sold to the gatherers at the village level (village trader), either in the form of fruit or powder. Furthermore, they will resell to the larger gatherer that is urban merchants at the district level. Gatherer at the district level (urban merchants) will then sell the resin of dragon's blood to the wholeseler. In some cases urban merchant will directly sell it to the exporter in Medan and Surabaya, which is then exported to China.

Penjernang usually sells the products obtained to the gatherers or processors who were in the villages nearby and had been known (village traders), considering that they already trust in pricing and also have provided capital (loans). Some *penjernang* did not bring the results in the form of fruits. They processed this fruits in the forest into powder to facilitate the transportation process. The resulted powder is still slightly dirty due to the processing which only use a wire screen.

The number of gatherers and processors of dragon's blood that exist in the village level, urban merchant in the district level, and wholesaler in the province level were not many. These actors have their own way or different techniques to search for and collect their wares. Because the availability of dragon's blood in the forest is getting scarce, urban merchant have to order dragon's blood fruits or resin a few weeks earlier to the village trader. In general, one urban merchant will have several village trader as dragon's blood supplier. Furthermore, some urban merchants will supply dragon's blood to the same wholesaler. If it is possible and more profitable, urban merchants will sell their goods directly to the exporter. In some cases, each of these actors (village trader, urban merchant, and wholesaler) will trade with one another at the same level to sell and buy dragon's blood fruits/resin. Such exchanges occur because the stock of goods (inventory) that exist in every actor is very limited. Therefore, each of marketing actors at the same level will also supply each other as long as it is mutually beneficial to all parties involved.

This activity is only mutually helpful to meet the demands of their patrons or to sell dragon's blood that are too long settled in one of the market actors, specifically when they need cash income immediately. Interviews and observations during the research indicate that there was a difference in price of dragon's blood fruits and resin that exists between actors, because big traders (exporters) of each player were different and dragon's blood qualifications they need were also not similar. Each wholesaler in the province level require different grade (level) of powder, depending on the demand of exporters

The market structure illustrates how the market characteristics of dragon's blood affect marketing behaviours. The market structures of dragon's blood along the value chain are

dominated by monopsony system at village level and oligopsony sistem at the district and also provincial level. The existence of oligopoly/oligopsony market in district and provincial level is due to some barriers to enter the market for new players or new producers (Dahl & Hammond, 1977; Nava, 2015). These barriers are:

1. Access to the information that is likely covered by actors to maintain interdependence with each other (close market).
2. Relation is based on trust with each other, therefore it causes great difficulties to access the market directly.
3. Difficulty in determining the quality (grade) of dragon's blood due to the subjective test and variations in quality.
4. Limitations of the raw materials (dragon's blood fruits), since most resources come from wild harvest.

B. Marketing Margin and Efficiency of Dragon's Blood

The collectors/middlemen know the quality of dragon's blood using a burn test by putting a sample of dragon's blood powder on litmus paper then heating the bottom of the paper. To find out the quality or grade, the middlemen use their feelings/guesses based on their past experiences. The more residues left on the paper, the lower the dragon's blood quality. In addition, the collector also relies on an assessment based on the appearance of colors, odors and textures. This method of determining the quality of dragon's blood will only be accurate if it is done by people who have quite a long experience in the dragon's blood business. Meanwhile, to find out the quality of dragon's blood accurately, laboratory tests are carried out which are quite expensive and require more time.

Marketing margin is the difference between the price received by producers and consumers (Soekartawi, 2002). Distribution of marketing margin among actors can be used as an approach to determine the level of efficiency of marketing system, in accordance with the costs, risks and benefits that have been sacrificed and gained by individual market participants. The amount of marketing margin of each actor could be uneven for each channel/marketing level. Marketing margin of dragon's blood was analyzed using the following marketing channels:

1. *Penjernang* (fruit) → village traders (fruit converted into powder) → urban merchants → exporter (Channel 1).
2. *Penjernang* (fruit) → village traders (fruit converted into powder) → urban merchants → wholesalers → exporter (Channel 2).
3. *Penjernang* (resin) → village traders → urban merchants → wholesalers → exporter (Channel 3).
4. *Penjernang* (resin) → village traders → urban merchants → exporter (Channel 4).

The result showed that the marketing margin obtained by each marketing actors was different (Table 3). The different margin was due to different added value that provided by each actors and also the different of transportation cost. The greatest profit margin in marketing of dragon's blood is received by the gatherers (*penjernang*) of dragon's blood. It was because the sacrifice made by *penjernang* to collect dragon blood is quite large and has a high level of difficulty and risk. Moreover, for channel 3 and 4, the added value to the product at this point by *penjernang* was the greatest where production activities were conducted by processing dragon's blood fruits to become resin of dragon's blood.

Based on the calculation results of the existing marketing channels of dragon's blood in the research location, all channels reflects efficient marketing with an average value of marketing efficiency were 17.86%. In marketing channel 3, the transfer of products from producers to the end traders can be held with minimal costs and a fair distribution of income from the prices paid by final traders to all existing trading institutions. Channel 3 was the most efficient

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Table 3. Distribution of margins and the price of dragon's blood at every marketing channel

Channel	Actor in the value chain	Bought products by actors	Cost		Selling price	Recovery factor	REVENUE (IDR/Kg)	Profit		Market margin	
			Initial unit cost	Added unit cost				Unit profit	%total profit	Unit margin	% final price
1	Penjernang	Fresh Fruit	910,000		2,000,000	100	2,000,000	1,090,000	60.89	1,090,000	42.08
	Village traders	Resin	2,000,000	500,000	2,700,000	100	2,700,000	200,000	11.17	700,000	27.03
	Urban merchants	Resin	2,700,000	300,000	3,500,000	100	3,500,000	500,000	27.93	800,000	30.89
	Total			800,000				1,790,000	100.00	2,590,000	100.00
2	Penjernang	Fresh Fruit	910,000		2,000,000	100	2,000,000	1,090,000	53.43	1,090,000	39.07
	Village trader	Resin	2,000,000	500,000	2,700,000	100	2,700,000	200,000	9.80	700,000	25.09
	Urban merchants	Resin	2,700,000	150,000	3,200,000	100	3,200,000	350,000	17.16	500,000	17.92
	Wholesalers	Resin	3,000,000	100,000	3,500,000	100	3,500,000	400,000	19.61	500,000	17.92
	Total			750,000				2,040,000	100.00	2,790,000	100.00
3	Penjernang	Resin	1,300,000		2,200,000	100	2,200,000	900,000	51.43	900,000	40.91
	Village trader	Resin	2,200,000	200,000	2,700,000	100	2,700,000	300,000	17.14	500,000	22.73
	Urban merchants	Resin	2,700,000	150,000	3,200,000	100	3,200,000	350,000	20.00	500,000	22.73
	Wholesalers	Resin	3,200,000	100,000	3,500,000	100	3,500,000	200,000	11.43	300,000	13.64
	Total			450,000				1,750,000	100.00	2,200,000	13.64
4	Penjernang	Resin	1,300,000		2,200,000	100	2,200,000	900,000	52.94	900,000	40.91
	Village traders	Resin	2,200,000	200,000	2,700,000	100	2,700,000	300,000	17.65	500,000	22.73
	Urban merchants	Resin	2,700,000	300,000	3,500,000	100	3,500,000	500,000	29.41	800,000	36.36
	Total			500,000				1,700,000	100.00	2,200,000	100.00

Table 4. Efficiency of marketing and farmer's share for each marketing channel of dragon's blood

Marketing channel	Total value of cost (IDR)	Total value of products (IDR)	Marketing efficiency (%)	Farmer's share (%)
	(1)	(2)	(1)/(2)	
Channel 1	800,000	3,500,000	22.86	57.14
Channel 2	750,000	3,500,000	21.43	57.14
Channel 3	450,000	3,500,000	12.86	62.86
Channel 4	500,000	3,500,000	14.29	62.86
Average	625,000	3,500,000	17.86	60.00

marketing channel because the profits received by the producers (farmers share's) was also high. In some cases, the benefits of harvesting and marketing of non-timber forest products are unevenly distributed along the chain from the forest to the market, in which the smallest proportion is mostly received by collectors (Neumann & Hirsch, 2000; Aoudji et al., 2012) which is in this case are *penjernang* (Table 3).

Farmer's share received by *penjernang* can also be seen in Table 3. Farmer's share is used to see how much share is received by farmers when conducting marketing activities. This study indicates that the highest farmer share was in channel three and four, which is 62.86%. Farmer's share illustrates the magnitude of the share received by *penjernang*. The greater share the farmers received, the more efficient and profitable marketing channels for *penjernang*. However, it does not necessarily reflect the favorable condition for *penjernang*, because in order to get dragon's blood fruit and powder requires a lot of time and energy to collect dragon's blood from the forest. Sacrifices made by *penjernang* in terms of time, energy and cost are greater than other actors.

IV. CONCLUSION

Relation of actors and behavior of marketing agents of dragon's blood will form a marketing institution with patron-client system, due to an unbalanced position in terms of economic, access and information. Among market participants there will be interdependence with each other that will form a trust based relation.

The value chain in the marketing of dragon's blood involves some actors that are interconnected to one another. There are 5 (five) actors that exist in the marketing of dragon's blood, *penjernang* (collectors of dragon's blood from the forest), village trader (village level collectors and also village level collectors and processors), urban merchant (district level collectors), wholesaler (province level collectors) and exporter. There were four marketing channel that exist in the research location. These four channels reflects efficient marketing with an average value of marketing efficiency is 17.86%. The greatest profit margin in marketing of dragon's blood is received by the gatherers (*penjernang*) of dragon's blood. Based on marketing efficiency criteria, channel 3 is the most efficient marketing channel, with the smallest efficiency value that is 12.86%. From *penjernang* the product will be delivered to dragon's blood traders at the village level. Then it would be sold to urban merchants at the district level. Urban merchants will sell it to the wholesalers at the province level. For the last, this dragon's blood would be transfered to the exporter. This result shows that the most efficient marketing channel was not the shortest channel. Among the four marketing channel, a fairly high farmer share (62.86%) was received by producer farmers (*penjernang*) in channel 3 and 4.

In order to get fair and equitable profit, every marketing actor must have information about the quality of dragon's blood resin, appropriate processing technique, and also non technical

counseling services that encourage every actor of marketing to become an honest market. By maintaining honesty of goods quality, price stability can be maintained. Furthermore, dragon's blood resin is an export commodity where its market depend on demand (market based demand), hence the level of demand, specification of product quality required and the price specified by the buyer (consumer) also tend to be unstable. Therefore, to maintain price stability and demand for dragon's blood resin, it is necessary to develop domestic industry, both traditional and modern pharmaceutical industries as well as paint industry that will require lots of dragon's blood resin.

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