

## Sources of Timber and Constraints to the Timber Acquisition of Jepara's Small-Scale Furniture Industries

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### Abstract

*Teak and mahogany furniture industries in Jepara are dominated by small-scale industrial unit, produce simple type of furniture mostly made from less than 28 cm diameter of teak log. Timber main producers of the industries are Perum Perhutani and village plantations. Small-scale furniture industries characterized by limited capital, therefore there is no log stocking behavior. This resulted in a close interaction on log supply and demand dynamics between both traders and industries. As a consequence of drastic increase in the number of the industries, one big question on sustainability of raw material for the industries has been emerged. Data taken from this research indicated scarcity of teak and mahogany log. Limited capital directs industries to blame the difficulties mainly due to increasing timber price. Additionally, the industries (and log traders) who are stand mostly in level 2 of log distribution chain mentioned that compared to 10 years ago, there is difficulty in obtaining bigger log diameter. It is a very interesting finding that the industries do not certainly sense timber scarcity as one possibility reason behind the timber scarcity. As weakness on business resilience has been the main characteristic of the industries, the threads would give a direct impact to the industries soon or later. To this, serious efforts in maintaining timber sustainability, shortening timber distribution chain, together with capital strengthening seem to be the fastest way in supporting the sustainability of the industries.*

**Keywords:** *teak furniture, timber price, small-scale, timber scarcity*

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### Introduction

Jepara, a city located in Central Java, has been widely famous for its wooden (teak) furniture industries. During period of 1998s, Jepara wooden furniture producers used to enjoy an encouraging business-growth, indicated by a significant increase in employment absorption and income. Roda *et al.* (2007) mentioned that Jepara wooden furniture industry has been supported by approximately 15,271 units of furniture industry, dominated by small-scale industrial units (14,921 units). The small-scale furniture industries usually closely related to small and limited capital and unsatisfactory quality of human resources.

Poor human quality resources of small-scale furniture industries may lead the industry into a very stiff competition, both domestically and internationally. Considering that recent furniture consumer has placing house furniture not only as a wooden structure but merely as arty product, the fact that most of the industries is best only for traditional ornamentation but poor with the modern product design (often copying the existing designs produced by their competitor from Vietnam and China), and having less-efficient production cost, may direct the industry to be in a very difficult situation that would make them ended up in the back line of the industries. Data taken based on the PDRB share had proved the thought. Teak furniture industries once

were the core of economy in Jepara and its surrounding areas, which ever reached a growth of 61.30% in 1998 (Kartajaya 2005), but then sharply decreased into 27.44% in 2007.

In the same time, it is undeniable that the existent of Jepara furniture industry depends very much on the continuity of raw material supplies. Without it, the industry will not be able to keep its business going in this very stiff competition. Imbalance between supply and demand is likely to be a very serious thread to the industries. Roda *et al.* (2007) noted total demand raw material for the whole Jepara furniture industries was 1.5 to 2.2 million m<sup>3</sup>/year as a consequence of drastic increase in the number of the industries before the 1990s to 15.271 units in 2007. This total demand was too much high even compared to the official log production issued by Indonesian Ministry of Forestry for the whole Java i.e. 923,632 m<sup>3</sup> in 2004.

Two big questions then emerged from the situation: (1) does there is a problem in timber availability, and (2) what kind of constraints to the timber acquisition is, whether it is due to the log price, or due to teak scarcity. Further, the very next question is what strategies must be taken by the small-scale furniture industries player to overcome the problems. The research therefore was directed to answer questions on timber availability and determine the constraints to timber acquisition for small-scale furniture

industry player. Discussion in this report was divided into 6 sub topics: key players in the patterns of supply and demand, log preference, and trend on log purchasing and selling, timber availability, timber distribution chain, constraints to timber acquisition, perception on competition, opinion regarding to overcome timber constraint to acquisition, and perception on timber certification. In the timber availability aspect, a comprehensive research on timber sources dynamic has been conducted in Jepara. Various aspects will be analyzed comprehensively in the research i. e. stand structure, species preference of tree grower, and trend estimation on future supply of teak and mahogany.

## Method

To achieve the above objectives, a number of analyses were carried out in this study which included:

- 1 Timber sources analysis and perception of the industries to timber availability.
- 2 Patterns of supply and demand by identifying dominant suppliers and buyers, along with the influential aspects
- 3 Function of dynamic purchase which includes patterns of raw material distribution from the supplier to the furniture industries, the relations between patterns of furniture production/sales and the patterns of raw material procurement.
- 4 Obstacles identification facing the furniture industries to carryout their businesses including aspects of competition in obtaining raw material, stock/inventory management, communication between supplier and industries (the guarantee for supply and information certainty), and the effects of the increase in raw material prices.

In general, timber main producers of the small industries can be identified as Perum Perhutani and village plantations. Analysis on the biggest teak and mahogany producer namely Perum Perhutani is carried out through secondary data. The data for this research were obtained through survey by the use of questionnaires directed to the key respondents which consisted of teak and mahogany suppliers and its users from all levels in all distribution pattern determined. Raw material user in this research was small-scale furniture industries player that was defined as industries employ as much as 10 or less workers (including permanent and semi-permanent workers). As much as 40 respondents were chosen by purposive sampling for both respondent groups. Data obtained from various literature studies was also used to sharpen the result analysis.

Data collecting for the furniture industries was taken in 8 administrative counties out of 16 administrative countries in Jepara Administrative District, namely Tahunan, Kedung, Pakis Adji, Mlonggo, Batealit, Jepara, Pecangaan, and Bangsri. The 8 counties were chosen based on interview by native enumerators on the industries main distribution. Data for log supplier located in Jepara was taken based on timber chain distribution identified from survey conducted to the respondent of small-scale furniture industries and several

others possible supplier for their industries. This respondent selection method was chosen as we aimed to follow timber chain distribution of these small-scale industries player.

## Result and Discussion

**Timber sources to small-scale furniture industries** It was identified that as much as 15% of the industries consumed teak wood produced by Perum Perhutani, 48% of them consumed village plantation teak, and the rest respondents could not identified the origin of teak their consumed. Only 10% of the total respondent consumed mahogany as well teak, which 50% of them used mahogany produced by Perum Perhutani. We also found that at least 1 respondent confessed the use of non teak and mahogany for their products. The reason in using Perum Perhutani teak production was due to its quality and its specification on log diameter, as most of their furniture products required at least OD (22-28 cm diameter) of teak and mahogany log, or because their consumer asked the industries to only use this qualification log to make their order. Simply design of products with low products quality has made small furniture producer industries tend to use only teak produced from village plantation with smaller diameter.

Perum Perhutani had been a major supplier of teak and mahogany for Jepara furniture industries until last decade. Working on the size of 2,665,304 hectares, Perhutani is the leading java teak and mahogany forest plantation management of forestry sector in Indonesia. Total production area is almost 66.31% of the total area, equal to 1,767,305 hectares, in which most of the area is teak forest stand (Perhutani 2006). However, from secondary data it was found that Perhutani itself could not afford responsibility in fulfilling raw material demand for Jepara industries. Assumed that Perhutani is focused its business to overcome wood demand of Jepara furniture industries, still there is a huge wood supply lacking. Data of Perum Perhutani timber production shows that Perhutani could only supply teak as much as 524,745m<sup>3</sup> in 2004, 361,152m<sup>3</sup> in 2005 and slightly increased to 491,262m<sup>3</sup> in 2006. While for mahogany, it was only 47,383m<sup>3</sup> in 2004, 62,141m<sup>3</sup> in 2005 and 51,202m<sup>3</sup> in 2006 (Perhutani 2007).

In the other side, Roda *et al.* (2007) noted that total demand raw material for the whole Jepara furniture industries was 1.5 to 2.2 million m<sup>3</sup>/year as a consequence of drastic increase in the number of the industries before the 1990s to 15,271 units in 2007. The total demand was too much high even compared to the official log production issued by Indonesian Ministry of Forestry for the whole Java i.e. 923,632 m<sup>3</sup> in 2004. The data point out that Perum Perhutani could only afford as much as 28-38% of the total teak and mahogany demand for Jepara furniture industries.

Drastic increase in the number of the industries before the 1990s to 15,271 units in 2007 is believed as one significant reason behind this huge demand. In the other side, a catastrophe on forest plantation due to aggressive illegal

logging and deforestation started in 1997-1998 was suspected as a one key factor in causing this obstruction. The loss of 7.2 million teak trees all over Java because of the looting has caused the potential supply of teak and mahogany tends to drop dramatically. Reportedly, the average of wood loss suffered by Perum Perhutani Unit 1 (Central Java area) before 1998 was as many as 88,050 trees/year, which then skyrocketing to 1500% in the following years to the number of 1,361,576 trees/year. In the other side, Perum Perhutani does not only face the decrease in the number of trees due to illegal logging, but as was mentioned before, it was triggered by a problem relating to deforestation (forest encroachments). Various cases in working units of Perum Perhutani all over Java indicated the change of land function to be farming areas. Statistical data of total forest area showed a decrease trend, from 3,075,082 ha in 2003 into only 2,665,304 ha in 2006 (Perum Perhutani 2007).

In fact, furniture industries can buy teak and mahogany not only from Perum Perhutani. Village plantation/people forests that can be found in Java, Sumatera, Sulawesi, and other places were supposed to support Perum Perhutani in providing industry's needs of the timber. As was mentioned before, as much as 48% of the total industries mentioned that the origin of teak or mahogany they buy from the traders were from village plantation scattered in Jepara and outside Jepara. Government of Jepara Administrative District reported that total village plantation area scattered in Jepara was as much as 12,115.9 ha, with averagely 14,248 trees/ha consisted of various species of tree i.e. teak, mahogany, albizia, bamboo, mindi, and sono (Jepara Administrative Government 2008).

However, most of these teak and mahogany growers do not apply an intensive silviculture system like Perhutani. More over, preliminary observation on Jepara teak and mahogany village plantations showed that most of the plantations were dominated by young tree with diameter less than 10 cm. Considering that teak and mahogany required at least 10-15 years reaching 7-13 cm diameter, and more years for bigger one, this means that in near future, these plantations could not provide raw material for the whole industries. In addition, if we talked about general village plantation (not only in Jepara), we should not ignore the fact that some of the areas formerly planted by trees as village plantation have changed into farming areas/rice fields or housing. This is because of fast population growth that has caused tough competition in the land use. To this, wood supply sustainability has been becoming worsened as the quick rate of deforestation does not only occur in the forests of Perum Perhutani. Therefore, timber scarcity would be a serious threat in a very near future.

**Key player in the patterns of supply and demand** All of 40 respondents of small-scale furniture industries located in the 8 chosen administrative districts were home industrial-based, means using their home as workshop. The industries

have less of 10 workers (including permanent and non permanent), and they can reduce number of this worker anytime, as most of the industries run their industry intermittently.

The industries produce variety of furniture products mostly simple types of chair, table, buffet, shelf (2 or 3 doors), and bed with selling price is varied from Rp200,000 (chairs) to Rp3,5 million (bed). Most of the product was half finished furniture, which then sold to showroom owner in Jepara or to brokers located near by their workshop. However, they also produce others furniture in accordance to their customer (end user) order, such as bed, bar set or kitchen set with special design. Location of their industries was varied from 1-20 km from centre of administrative county. As much as 47% of the total respondents had started their business since before 1999, and another 43% has been experiencing 10 years in this industry. The rest just has started the industries within less than 5 years ago. These industries have variable quality control level. Most of them do not applied good quality control, which ended up in cheap product price. However, some of the respondent could produce a good quality of furniture, especially those their production is sold to direct customer (end user) or showrooms in Jepara.

As small-scale industries, they tend to buy log from log traders located near by their workshop to minimize transportation cost. Adjusting main problem of small-scale furniture industries in purchasing raw material, the supplier tend to choose small diameter teak and mahogany as their most commodities. In this research, we classified log traders in three main classifications namely: big trader (buy and sell more than 100 m<sup>3</sup> of log/month), middle class trader (buy and sell more 50 to 100 m<sup>3</sup> of log/month), and small trader (buy and sell less than 50 m<sup>3</sup> of log/month). Several traders also owned sawmilling to make it easier for their buyer to directly process the log into planks. All traders are Jepara people, as much as 37.5% of them are old players who started their business since before 1999, and another 37.5% are new players, while the rest has started their business less than 10 years before.

Specific reasons i.e. close personal relationship, location of log yard that near by workshop, negotiable payment system, and affordable log price were identified as the most reason of the industries in choosing log trader. Among the reasons, affordable log price was mentioned as the most important reason. Only 10% among the respondent mentioned that log quality was their most reason in choosing log trader.

**Log preferences and trend on log purchasing and selling** Dominant preference of log species of the small scale industries was teak, and only 1 respondent used both teak and mahogany and another 1 has specialized in mahogany for their industry. Preference of log specification diameter was 39% with OD (22-28 cm), 22% with DL (10-13 cm) and 20% with OP (16-19 cm). Only 15% among the respondents

used 30 cm diameter of log, and the rest was prefer to use piton (7 cm) and A5 (50 cm up) of log. The A5 log specification is only for mahogany, as its price is still affordable.

The mentioned preferences were due to three main reasons (1) suitability of the log diameter with their product (48%), (2) affordable price (33%), and (3) better quality of bigger log diameter (18%). However, 44% of those in the 48% were industrialist who has shifted their product to simple products such as simple or small type of chair to adapt with increasing log prices. This means that in general, 55% of respondents consider log price as their main reason in choosing smaller log diameter as raw material for their furniture industries.

All respondents refrained to buy sawn wood because of its uneconomical price. To this, they subcontract the initial sawmilling located near by the log park where they buy the log (some of them are integrated), or near by their workshop. The sawmilling splits the log into planks, which are later used in manufacturing component for their products.

It is difficult to estimate monthly log purchasing as they do not have a certain buying period. Most of the traders run their business without record their transaction. Therefore, it is difficult to get quantitative data of timber purchasing and selling flow. Through rough estimation on log transaction during April 2008-March 2009 period, we found that the transaction tend to significantly increased on July, September, and December. This is due to Idul Fitri and Christmas/New Year events. However, from yearly qualitative data we determined 4 general purchasing and selling patterns for both industries and log trader.

Some of 20% of the industries buy log only if they just about to finish their last log, or when they get order from their customer, as some of them could get small amount of down payment. The other 38%, which is the dominant pattern shows a bigger transaction pattern in the end or in the beginning of the year. New Year and Christmas events seem to be the reasons of this tendency. As much as 25% of them indicated constant volume on log transaction, and 10% shows a bigger transaction rate in the middle of the year, around June to September. Further, 8% among the respondents mentioned that they tend to do a bigger transaction before special Javanese month such as "*Rejeb* and *Besar*". In this case, the furniture industries do not have a log stocking tendency, therefore their production and timber purchasing trend shows similar pattern. They buy log as much as they need for their industries.

In case of log trader, the general pattern is similar with the industries for both purchasing and selling. However, they have a tendency to stock their log. As much as 38% of traders conducting bigger volume of log purchasing in the end or beginning of the year, 25% have a constant purchasing pattern, and the other 20% show a very heterogeneous pattern. The rest 10 and 8% buy log from their supplier in the middle of the year and only in special Javanese months, respectively. In case of timber selling,

39% of the traders sell bigger volume in the beginning or end of the year, 24% indicates a constant volume of selling, 18% mentioned no specific pattern in their selling, and 11% of the traders sell bigger amount of timber in the middle of the year around June to September.

It is important to consider that Figure 1 does not express purchasing and selling volume, instead it only expresses number of log traders and small industries. This means that lower percentage of industries selling volume (which equal with purchasing volume) could not be considered as the indication of over supply by the traders. Based on the same point of view, lower percentage of trader who conducts bigger transaction of log purchasing from its supplier in the middle of the year than the percentage of industries who buy log in the similar period does not indicate big gap of supply and demand. Actual data relating to timber purchasing and selling is quite difficult to obtain, unless if there is a long term observation to the actual transaction.

However, purchasing and selling pattern shown in Figure 1 indicates a good interaction between log trader and its supplier, and between log trader and furniture industries. This pattern indicates that most of the industries get their raw material from log traders based on Jepara, which clearly indicates a very close and strong relation between log traders and small scale furniture industries in Jepara.

In relating to market destination of the end product (international versus domestic market), the traders mentioned that there are two different selling types in a year. During November to May, most of their customer usually demands bigger diameter of teak. In contrary, during June to October, most of the customers buy lower quality of log means smaller diameter. This is because majority of furniture industries in Jepara tend to make garden furniture for export during the first period, while during the rest, they focus on furniture manufacture for local market. It is difficult to estimate that the purchasing behavior is especially pointed out to small scale industries, as the trader do not determined their buyer relating to this purchasing behavior. However, from most type of furniture products produce by small industries, there is a certain indication that most of their product is for domestic market.

The industries have a tendency to use loans from their customer (buyer) to purchase teak log. That both industries and log traders have made a long time collaboration in this business, and that most of them has a close relationship as neighbor, has made credit payment is a common practice. This payment system is possible as most of small enterprises buy log in small volume (averagely 9.5 m<sup>3</sup> log/month).

**Timber distribution chain** Unlike most big furniture industries with international market orientation, these small industries obtain their raw material indirectly by purchasing it from log trader within Jepara. Only 1 among all respondents purchases teak directly from tree growers (village plantation) surrounding Mlonggo Administrative County.

However, its purchasing volume was very small and there was no certain pattern of purchasing period.

Based on timber origin (Perum Perhutani or village plantation), it is very interesting fact that the timber supplied for big log traders was taken from village plantation and not Perum Perhutani. In case of middle class trader, 4 among 7 respondents bought log from Perum Perhutani. The rest bought log from village plantation in Wonogiri, Pacitan, Blora, Cianjur, Pati, Wonosari, Playen, Yogya, Tanjung Seto, Sempor, Kebumen, North Lampung, and South Sulawesi. Most of the log was supplied by big broker, but log from South Sulawesi was obtained from big log trader based in Sulawesi. In case of small trader, 25% of their timber produced by Perum Perhutani, and the rest was supplied from village plantation in different areas such as Banten, Blora, Boyolali, Cianjur, Mantingan, Gunung Kidul, Pacitan, Wonogiri, Jepara, Kebumen, Lampung, Purworejo, Kulonprogo, Kaijambi, Wonogiri, Wonodadi, Kendal and Cepu. Based on the data taken, Pacitan, Kebumen, Cianjur, Gunung Kidul, Blora, North Lampung, and Purworejo were considered as main timber producer areas.

Based on statistic data issued by Jepara Government in 2008, village plantation has a potential for timber product. Total tree in the village plantation was 14,248 trees, with 9 m height and 17.4 cm of diameter planted in 12,115.9 ha of village plantation. However, the data did not show the actual potential for teak and mahogany, as the data pointed to the total of various species of teak, mahogany, *sengon*, *sonokeling*, bamboo, *mind*, *trembesi*, *sono merah*, mango, *dewadaru*, *kalimasodo*, *stigi*, and *laban*. To this, one

research aimed to describe actual teak and mahogany potential plantation is needed.

In case of log selling, there are several patterns in log selling depend on timber origin. Perum Perhutani has applied two selling systems, namely direct and auction mechanism. Direct purchase or purchase with a special permit (contract) is usually done by a big-scale furniture industry as it needs a big capital. Auction is usually followed by big traders under certain auction mechanism where timber is sold to furniture industries through log trader. It is also a common practice that subsequently, this log trader resells the timber to other log traders (usually middle class traders, and rarely small traders), before then it is sold to furniture industries.

In the second mechanism, distribution chain is longer and the prices paid by the furniture industries are also much higher than those in the auction. Meanwhile, this mechanism is often the only option for small-scale furniture industries since their working capital is limited. The difference can reach 1 million rupiah per m<sup>3</sup> compared to the official price of Perum Perhutani (Table 1).

Selling mechanism applied for village plantation timber is auction. Different with Perum Perhutani, auction in this system is not based on homogenous timber specification and classes. Instead, log trader should buy timber per truck which volume may range from 5 to 5.5 m<sup>3</sup> log consist of heterogenic log specifications and classes. In several cases, we found out that supplier also conducting bad practice by mixing small branches or very low quality of timber in between the bunch of log to make bigger volume.

Table 1 Teak (log) price in Perum Perhutani

| Market system  | Log grade | Average of price/m <sup>3</sup> (× Rp1,000) |       |       |       |       |
|----------------|-----------|---|-------|-------|-------|-------|
|                |           | 2000  | 2001  | 2002  | 2003  | 2004  |
| Big auction    | AI        | 448   | 511   | 444   | 429   | 461   |
|                | AII       | 777   | 897   | 880   | 893   | 1,017 |
|                | AIII      | 1,905                                       | 1,899 | 1,902 | 1,762 | 2,436 |
| Small auction  | AI        | 443   | 447   | 395   | 406   | 415   |
|                | AII       | 784   | 887   | 840   | 861   | 887   |
|                | AIII      | 1,715                                       | 1,757 | 1,573 | 1,682 | 1,706 |
| Contract       | AIII      | 2,824                                       | 3,262 | 3,195 | 5,852 | 4,013 |
|                | AI        | 492   | 544   | 629   | 588   | 685   |
|                | AII       | 1,027                                       | 1,085 | 1,219 | 1,199 | 1,363 |
| Direct selling | AIII      | 3,545                                       | 3,522 | 3,539 | 3,124 | 3,637 |
|                | AI        | 461   | 501   | 489   | 474   | 520   |
|                | AII       | 863   | 956   | 980   | 984   | 1,07  |
| Average        | AIII      | 2,497                                       | 2,610 | 2,552 | 3,105 | 2,948 |

Source: Ichwandi (2008)

In relating with timber distribution level, 96% of industries respondents buy timber from log trader in Jepara. It was very rarely (only 4%) to find industries that obtain their timber from local broker outer Jepara. In case of log trader, there was heterogeneity of distribution chain, resulted in several level classifications of Jepara log traders classified as: level 1 (first line log trader), level 2 (second line log trader), and level 3 (third line log trader). First line log trader is those who buy log directly from tree grower. The second line log trader is those who buy log from local broker who gather log from tree grower. The third line log trader is considered as the trader who get their log from other log trader or local log trader.

Most of the trader stood for level 2 (68%), as much as 23% stood for first line trader, and only 9% of them stood for third line of log trader. This tendency of distribution chain shows that generally small industries have to buy log with higher prices as log is available mostly in second or third line of trader. Timber distribution that is involving tree grower, broker, and local log trader is not described comprehensively in this report yet, as another validation research on these levels is required. The research is now

under progress. However, temporary distribution chain estimation has been made as is shown in Figure 1.

Distribution chain described in Figure 1 shows that direct purchasing is actually possible for the industries, as they can obtain the raw material directly from village plantation scattered Jepara Administrative District. However, there was no certain statement from the industries regarding to this fact. Through interview we found that the absence on direct network to the tree grower seems to be one crucial constraint. In the other side, there was an increasing awareness of Jepara people in good prospect of teak, indicated from our finding on young teak plantation scattered in some Jepara county side areas. Data on village plantation development provided by Jepara Government shows that there is a positive tendency in plantation development. In 1999, total planted area in Jepara was only 679 ha, and increased dramatically into 1,804 ha in 2003. Even though there are various tree species planted in the plantations, teak is the dominant species. To this, optimistically, developing direct network between tree grower and small industries is a possible effort in the near future.

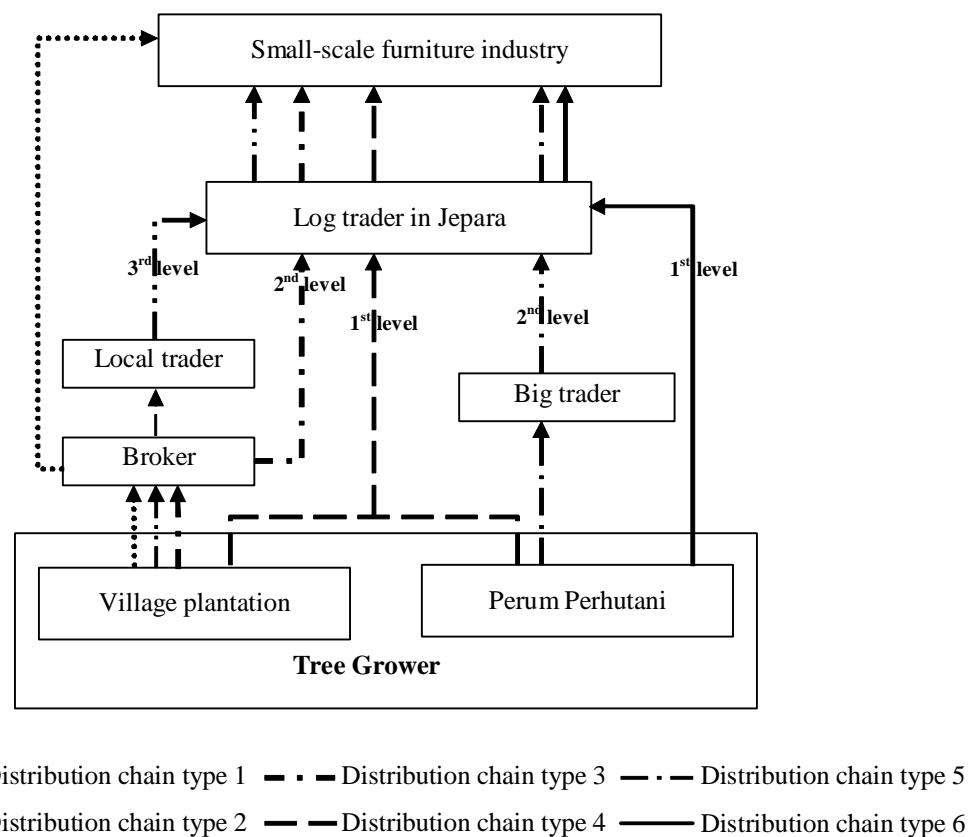


Figure 1 Timber distribution chain for small scale furniture industries in Jepara.

**Constraints to timber acquisition** One of the small industry's biggest problems in running their business is timber price. According to the interview, log price has aggressively increased, especially after Indonesian government issued regulation on new fuel prices in 2002. As transportation cost had become expensive, price of teak and mahogany transported from outer Jepara also significantly increased. Later, we found that the price should be paid by the enterprises has increased very frequently, even 3 times a year. Perum Perhutani as good quality of teak and mahogany main producer lately also increased the timber price through the issuance of SK Direksi Perum Perhutani No. 010/Kpts/Dir/2008 which increased the basic sale price of teak logs by 20% effective from the 21st of January 2008. Apart from teakwood, the price of other raw materials for Jepara furniture such as *sonokeling*, *sonobrit*, *sonokembang*, and mahogany have been risen up to 30-60%.

As theoretically price can be used as indicator of commodity scarcity, it was very interesting to find out that even though timber price has obviously brought difficulties to their industries, they do not consider competition in obtaining the preference specification of timber is needed. Regarding to the timber price, the industries would like to afford higher price to obtain the preferred raw material from others log trader in Jepara. To this, as much as 69% of respondents would like to pay up to 5% higher, 21% would like to pay 10-15% higher and the rest have ability to pay more than 15% higher from the original price.

In the aspect of timber scarcity occurrence, 96% of the industries said that there are no difficulties in obtaining preferable specification timber from log trader. They said that they can easily get the preferred log from other log trader in case they could not find it from their usual supplier. However, through interviewed it was revealed that the preferred timber does not really mean their "first choice". They used to use bigger log diameter classes for their industries, however

as the bigger diameter class is getting too expensive, they started to use smaller diameter class, results in lower product quality.

Further analysis revealed that there is weakness in bargaining position that is clearly indicated from the selling price of their product which is relatively stacked compared to log price. Data calculation showed that averagely, the timber price was risen up to 72%, while in the same time selling price of the product was only risen up to 30% (Figure 2). Even though the estimation was based on the questioner, in which most of the respondents do not like to give a precise price because of several privacy reasons, imbalance on input and output cost of the industries is clearly indicated.

This imbalance has caused a significant difficulty to the enterprises, as all respondent mentioned significantly lower profit margins to the industries. As industries with small capital, low profit margin may cause a serious threat to their business resilience. In order to minimize production cost, some of these enterprises have applied several strategies: (1) increasing efficiency of the use of raw material, (2) temporary stop the production unless there is order from customer, (3) reducing permanent worker, (4) use cheaper raw material that has lower quality, or the worst is (5) mixing teak or mahogany with other wood species that is cheaper.

Through interview with small industries, the practice of mixing teak and mahogany with cheaper raw material, such as *mind*, *rambutan*, *weru* and *waru* has been conducted by some respondent. They tend to do this as they have to pay higher cost for teak, but in the same time their costumers do not agree with a higher product price as a consequence. Whether this practice is agreed with their customer or not was not investigated further. However, whether the customer agree or not agree with this practice, in the long term this practice may cause a significant bad influence to the Jepara furniture image, especially if their customer is not end user.

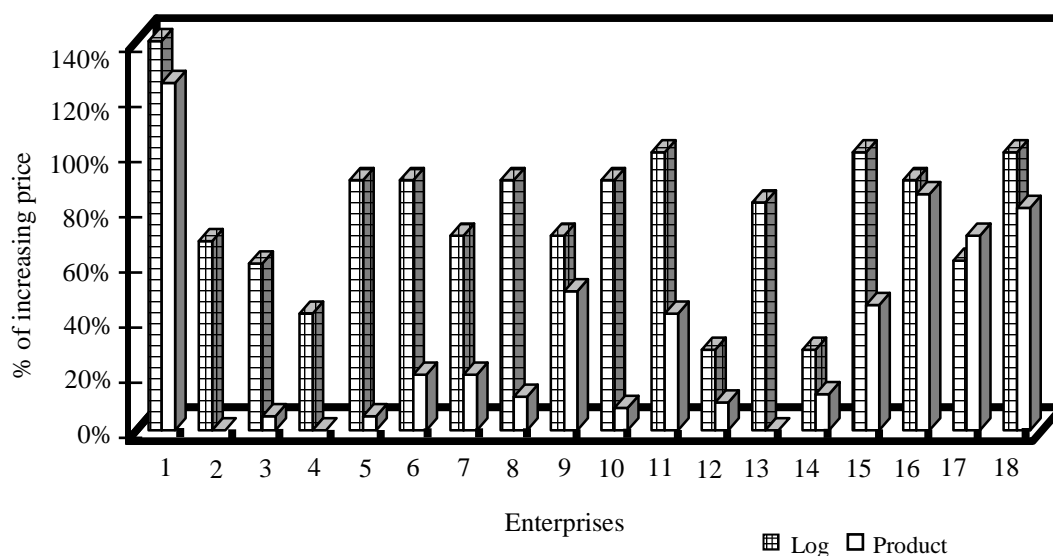


Figure 2 Percentage increasing price of timber versus product.

**Perception on competition** Compared to small industries, log trader seems to have a better resilience. Even though some of them mentioned decreasing trend in selling rate, log trader who specialized for 40-50 cm diameter of timber experienced better profit margin. The reason is that even timber price is going higher, furniture industries have no other choice but to buy their timber. In addition, log trader will also sell non teak and mahogany timber to fulfill demand of these industries, in case the industries could not afford the teak and mahogany timber price.

In relating with buying price, affordable price of log trader in Jepara is ranged from 5 to 10% higher of original price. It seems that industries have a better ability in purchasing timber, indicates from higher percentage on bargaining. However, most of the reason behind this practice is that they would like to have a very minimum profit as long as they still can run their business. This condition may indicate dependency of the artisan to the furniture business.

That there is competition in obtaining timber from supplier is mentioned by log traders. However, no respondents classified as big trader mentioned competition in obtaining preferred timber from their supplier outer Jepara (Lampung and Pacitan). As much as 80% of middle class traders mentioned that there is competition, but the rest mentioned no competition in obtaining preferred specification of timber. In case of small trader, 70% mentioned competition, but the rest mentioned no competition. Direct interview with the traders revealed that it became harder to get timber as they preferred from their supplier. Questionnaire data support this finding. Several respondents mentioned that they had shifted log commodities to smaller log, as their supplier could not provide bigger diameter log as was in 10 years before. There are no difficulties in obtaining small diameter of log i.e. 7,10, and 13 cm, but it is when the order is about bigger diameter. To this, most of them have to accept every specification their suppliers have.

The traders agree that this competition not only due to higher transportation cost, but also due to timber scarcity. To accomplish this competition, some of the traders buy timber in a big volume when its price was relatively cheaper, to then stock it in their log parks. This situation then indicates that unlike log traders, most of respondents in industries level have given less awareness on sustainability of raw material that suspected to be a serious threat for their industries in the very near future. There was an interesting finding relating to the increasing log price. We identified it as lacking awareness of small industries to the possibility on log scarcity occurrence, even though they know very well that in the recent years it is quite difficult to obtain bigger diameter of teak.

**Opinion regarding to overcome timber constraint to acquisition** According interview data, there are several opinions in overcoming timber acquisition constraints from small industries point of view: (1) manufacturing more

simple furniture design, (2) shortened timber distribution chain, (3) enhancing serious effort for capital adequacy, and (4) developing better communication and coordination among the industries. In relating to the last opinions, 95% of respondents said that they have no any idea about APKJ (*Asosiasi Pengusaha Kecil Jepara*) an association for small-scale furniture industries that has been initiated in Jepara and about to be launched soon. This finding should get a serious consideration from initiators of APKJ, as the main aim of the APKJ is to strengthen small scale furniture industries.

Continuous support from government in providing good quality of timber with affordable selling price also mentioned as their expectation on strengthening their ability in overcoming problem in obtaining raw material for their industries. Regarding to this support, Perum Perhutani as state-owned forest company had launched “*Warung Kayu*” Program. Through this program, industries can buy teak and mahogany timber produced by Perhutani with relatively cheap price for good quality of timber. However, the program has been suspended for uncertain period. It is said that transportation cost from Perum Perhutani forest management area outer Jepara has made timber price could not compete with that sell by independent log traders in Jepara.

As was mentioned above, high timber price is considered as main constraints to obtain raw material for industries. But from the log trader point of view, document related to timber purchasing and transporting is quite a problem, especially if the timber is harvested from village plantation. They mentioned ineffective and complex procedure to obtain such of documents, incapability to see the preferred timber directly (most of the negotiation is conducted by phone) and other additional cost to transport timber has been caused additional unexpected cost resulted in high economical cost.

From log traders point of view, potential strategy to be applied in overcoming timber constraint are (1) purchasing a lot of timber when the price is relatively cheap (timber stocking behaviour), (2) conducting good communication and cooperation within traders, (3) creating wider net work with other broker outer Jepara, and (4) strengthen their capital. They also mentioned (5) the importance of stable fuel price, which will significantly influence the transportation cost.

**Timber certification** Timber certification has played an important role in timber and its products market. Recently, international customers pay more consideration on forest management sustainability as an important aspect in choosing goods produced from forest. To this, as Jepara has been widely famous for its wooden furniture industries, this issue should be considered as one important pile in supporting sustainability of the industries.

However, interview conducted to respondents of both small scale furniture industries and log trader indicates an emergency situation as most of them do not show any awareness and even sufficient knowledge regarding to this



timber certification. As much as 25% of respondent from small-scale industries said they agree with the certification only if timber price would be cheaper. The rest said that they do not know what the certification is and why this is important for their business.

In general, only 18% of log traders in Jepara know about this timber certification. However, all of them support certification for their own benefit, as they think that timber price would increase and this means better profit for their business, and as much as 3% of the 18% support certification because certification is required to export furniture product. The other 48% answered that they do not agree with the certification because the certification will possibly increase timber price. The other 10% disagree because the certification may cause complexity in timber transaction. The rest of respondents (24%) answered that they have no idea about this certification or misunderstanding the certification with document that certify timber legality.

## Conclusion

Data taken from this research indicates thread in imbalance between timber supply and demand in the very near future. In relating to this thread, several constraints in obtaining timber as raw material for the small scale furniture industries have been revealed. The industries and log traders who stand mostly in level 2 of timber distribution chain mentioned that compared to 10 years ago, there is difficulty in obtaining bigger log diameter. Another finding on timber constraints is increasing price of log. The findings indicate an alarming situation on timber availability. To this, we estimated that the problem was rooted by timber scarcity.

However, interview with small industries showed the same opinion that most of the industries did not have any awareness of serious thread on log scarcity. Instead, they mentioned that timber scarcity is not the main reason of increasing log price. External factor of fuel price has been considered as one reason triggering the increasing price. Small industries seems avoids the serious thread in teak and mahogany availability, as they mentioned aspects on

(1) manufacturing more simple furniture design, (2) shortened timber distribution chain, (3) enhancing serious effort for capital adequacy, and (4) developing better communication and coordination among the industries, as their preference actions in tackling constraints to timber acquisition. In the same time, even the log trader indicated a better awareness on the serious thread, they do not mentioned any efforts in overcoming the thread on timber availability.

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