

Analysis of Downstream Entrepreneurs' Knowledge in South Sumatera Forestry Agribusiness: Impact on Certified Raw Material Selection

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Abstract: The wood industry is a downstream forestry sector. So, as an industry that uses wood as the main raw material, this industry is very dependent on the forestry sector. The relationship between the timber and forest industries is very close, and these two sectors influence each other. Analyzing the relationship between the level of knowledge of entrepreneurs regarding the sustainability of wood raw materials and the decision to buy certified wood or not is something that is really needed to become the basis for sustainability. By using a mixed-method research method, it is hoped that this research will be able to contribute to describing the situation of knock-down house entrepreneurs so that they can have a positive impact on the South Sumatra forestry agribusiness system. This research found that the level of knowledge of knock-down house entrepreneurs about certified wood is very low. It was detected that only 3.5% of entrepreneurs used certified wood. Meanwhile, almost 70% of respondents stated that they were not very interested in knowing more about certified wood. This situation is known to have a very significant level of influence on preferences for selecting certified raw materials or not.

Keywords: Agroforestry; Certified timber; Entrepreneurs' knowledge; Knock-down house

Introduction

The concept of agribusiness first appeared in the book "A Concept of Agribusiness" by Davis in 1957 which stated that agricultural activities are not just agricultural activities, but also include processing (industrial), storage and marketing activities of agricultural products (Davis, 1957). According to Sjarkowi (2020), agribusiness or commerce is also an important sector in people's development which can encourage people's economic growth. However, development must also be supported by a sustainable system (Sustainable Development). The long-term goal of sustainable development is to live better in the future without endangering other people, nature and society. This can be done by balancing three dimensions or three basic principles of sustainable development, namely

ecological (environmental), social and economic development (Setianingias et al., 2019).

As one of the agribusiness sub-sectors, forests are public property that must be managed fairly or sustainably (Alfiansyah et al., 2023). In response to this, the government continues to encourage the Indonesian forestry industry to continue to develop. In fact, the forestry industry is very dependent on the area of land managed and the management of forest resources themselves. The diverse opportunities in the forestry sector must be developed through the implementation of new policies that are more targeted, adaptive and sustainable (Ministry of Environment and Forestry, 2021). Furthermore, according to Benyamin et al. (2019), the forestry industry is currently in a state of industrial sunset, which means that the situation in this sector is difficult to develop, even though the potential is very

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high. This is caused by various problems such as low trade security, land disputes, low land productivity, high production costs, and low competitiveness of the wood processing industry (Benyamin et al., 2019). Several studies also state that up to now, forest management that prioritizes wood as the main product has been unable to maintain the state of natural forests. This is demonstrated by the reduction in forest permit rights for wood production to meet the raw material needs of the domestic wood industry, and the increasing number of natural forests being logged and damaged in Indonesia (Nurda et al., 2020; Pratiwi et al., 2021). In fact, sustainable development goals for the forestry sector itself include sustainable forest management, combating desertification, stopping and reversing land degradation, and stopping the loss of biodiversity (Central Statistics Agency, 2022).

The wood industry is a downstream forestry sector. So, as an industry that uses wood as the main raw material, this industry is very dependent on the forestry sector. The relationship between the timber and forest industries is very close, and these two sectors mutually influence each other (Abdel-Fattah & Al Hiary, 2023; Barber, 2018; Kruger et al., 2022; Sam et al., 2021). To maintain a sustainable timber industry, it is important to have wise forest management practices. This involves sustainable tree felling and reforestation (replanting trees) to replace felled trees (Febrianto et al., 2022; Gërdoçi et al., 2015). A healthy relationship between the timber industry and forests requires protection against illegal logging and reduction of environmental impacts caused by industrial activities. Sustainable forest management practices aim to preserve wood resources and forest ecosystems (Azhar et al., 2023; Baudry et al., 2023; Paul et al., 2023; Pradhan et al., 2023; Troiano et al., 2023).

Using wood in the construction industry, including making wooden houses, can be considered as one of the downstream forest sectors. The forest downstream sector is a practice that converts raw materials from forests into value-added products, such as finished goods, which have a higher economic value than the original raw materials. In this context, wooden houses are value-added products made from wood obtained from forests. The downstream forest sector such as wooden houses has the potential to create higher economic value than simply selling raw wood (Mutaqin et al., 2022).

Wooden houses have been built by various cultures around the world for centuries. They are valued for their natural aesthetic, sustainability, and durability. Wooden houses can be constructed using various types of wood, including hardwoods like oak and softwoods like pine. The choice of wood affects the house's appearance and

longevity. It's important to use treated or naturally resistant wood to prevent decay. There are different construction methods for wooden houses, including log cabin, timber frame, and post-and-beam. Each has its own unique look and structural characteristics (Sikkema et al., 2023). Wooden houses can range from traditional to modern in design. The choice of design often depends on the architectural style, location, and the owner's preferences. Wooden houses are often considered more environmentally friendly compared to houses made from non-renewable materials such as concrete or steel. Sustainable forestry practices and responsible sourcing of wood are important considerations.

South Sumatra, a province located on the Indonesian island of Sumatra, has a long history of building wooden houses that reflect the local culture and environment. South Sumatra has a number of traditional wooden houses that combine elements of local culture and climate. Traditional houses here are often called "stilt houses" because the main building is raised from the ground, or "knock down houses" because the house can be dismantled and reassembled. Wooden houses in South Sumatra have a distinctive architectural design (Sikkema et al., 2023). Most wooden houses in South Sumatra are traditional houses, but there are also modern wooden houses that combine traditional elements with more modern facilities. The increase in the number of wooden houses produced in South Sumatra is related to increasing market interest as well. This raises separate questions related to the knowledge of wooden house entrepreneurs regarding the use of raw materials. According to (Ministry of Environment and Forestry, 2021), certified wood indicates that the wood source was produced with official permission from the government. So that in running a business using certified wood raw materials, entrepreneurs will be able to take responsibility for the source of the raw materials from both a legal and moral perspective (Alfieri et al., 2023; Ministry of Environment and Forestry, 2021). Analyzing the relationship between the level of knowledge of entrepreneurs regarding the sustainability of wood raw materials and the decision to buy certified wood or not is something that is really needed to become the basis for sustainability. This is the basis and aim of this research. However, long before that, analysis of production patterns and characteristics of knock-down home businesses became very important in order to map potential threats to business sustainability both in the industry itself and at the agricultural production stage (Derhab & Elkhwesky, 2022; Febrianto et al., 2022).

Method

This research was conducted in Ogan Ilir Regency, which is a production center for wooden houses or knock-down houses in South Sumatra. By using a constructivist and explanatory approach, this research relies on field realities and the results of subjective assessments of research data. Furthermore, the use of qualitative and quantitative research methods (Mix-method) will be carried out to obtain clearer and more detailed results. The sampling system used in this research is Simple Random Sampling, where all populations will have the same opportunity to be selected.

The population in this study were knock-down home entrepreneurs. Meanwhile, the sample determination was carried out according to the opinion expressed by Gay and Diehl in (Nalendra et al., 2021), where research used to determine descriptive results from a large population can take a sample of 10%. Meanwhile, for small populations, researchers can take a sample of 20% of the population. So, from the total population of knock-down house entrepreneurs of 562 people, 113 sample entrepreneurs were randomly selected. To obtain data, this research will use a survey method using a questionnaire.

Apart from that, researchers will also combine methods with a deep-interview system, namely observing research targets based on variables studied in depth. This research will use a univariate analysis method to determine the characteristics of respondents and use bivariate correlation with the Spearman test to determine the relationship between the level of knowledge of entrepreneurs regarding the sustainability of wood raw materials and the decision to buy certified wood or not. By using the bivariate Spearman correlation formula, this research will look at the relationship between entrepreneurs' knowledge and the decision to choose certified wood, as seen in Figure 1.

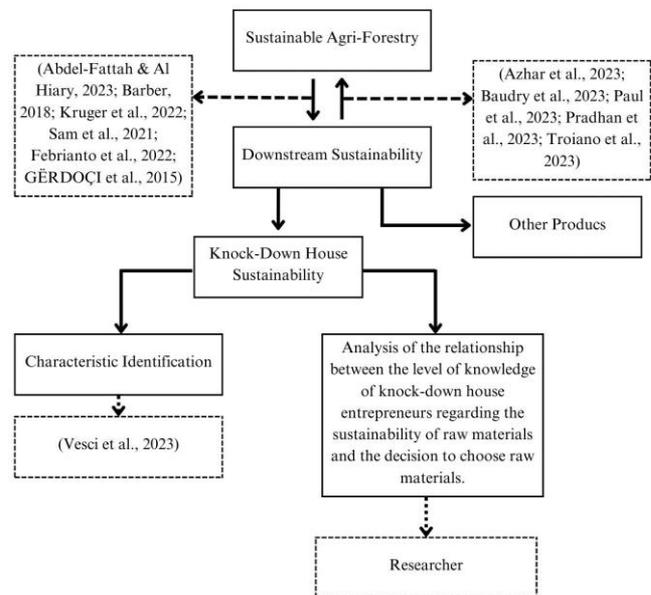


Figure 1. Research mind-mapping

Analysis of respondent characteristics such as age can be used as a reference for productive age. According to Padín (2022), the age factor is very influential in the implementation of innovations and renewable technology (Radipere & Dhliwayo, 2014). Apart from that, by knowing the number of family members of the respondents, this research will be able to become a reference regarding the potential for business regeneration in the future (Breitenbach & Foguesatto, 2023). Apart from that, several studies also state that the level of formal education also influences a business (Nurlaili & Hikmah, 2022). The level of formal education is also known to determine the extent of access to capital from other capital sources such as banking (Owolabi et al., 2023). Apart from length of business experience, another analysis that is considered necessary to determine the characteristics of respondents is gender. Gender itself, has been found in several studies to have a significant influence on business development and technology adaptation (Lashitew, 2023). Furthermore, the observed ordinal and nominal data can be seen in Table 1 below.

Table 1. Spearman Analysis Variables

Variables	Indicator	Code
Entrepreneurs' Knowledge of Certified Timber	Never know	1
	Know, but not interested	2
	Know, but have lack of information	3
	Know and try to learn	4
	Know and use certified timber	5
Raw Material Chosen	Non-certified timber	0
	Certified timber	1

Indicators of the level of knowledge of knock-down home entrepreneurs regarding the sustainability of raw

materials are divided into 5 categories, each of which is notated according to the value of the option or choice. Meanwhile, the decision variable for choosing raw materials is divided into 2 main choices, namely not buying certified wood and buying certified wood.

Result and Discussion

Knock-Down Entrepreneur Characteristic

Knowing the characteristics of entrepreneurs is a basic thing to do in the context of business development, business coaching, and determining policy decisions. Policy institutions can use data on entrepreneur characteristics to design policies that support economic growth and foster entrepreneurship (Vesci et al., 2023). In the knock-down house business in South Sumatra, the basic characteristics can be seen in Table 2.

In Table 2, it is known that the average respondent is still at productive age, namely 40.8 years. According to Radipere et al. (2014), productive age is the age range in which a person is considered to be at the peak of their productivity and contribution to the world of work. Productive age usually ranges from age 25 to 60 or more, depending on employment sector, education and other factors. By this age, a person often has sufficient experience, knowledge, and skills to make them efficient and effective in their work. In other research, it is known that the productive age ranges from mid-teens to middle age or older (Padín, 2022). In business, this is the time when a person has enough energy and endurance to work, educate the family, participate in social activities, and contribute to various aspects of life (Padín, 2022).

Table 2. Basic Respondent Characteristic

Variables	Average
Age	40.8 Years old
Experience	>10 Years
Number of family member	4 People
Gender	Male

Furthermore, this research found that the average knock-down house entrepreneur has been in business for more than five years. This indicates the length of business experience of each respondent. According to Jia et al. (2023), length of business experience refers to the period of time an individual or company has spent running a business. This includes all the time spent developing, establishing and operating the business. Length of business experience can be an important factor in assessing the level of success, stability and trust in business (Jia et al., 2023). Businesses that have been operating for a long period of time tend to have greater financial stability. In addition, length of business experience can often be an indicator of success. Businesses that survive and thrive over the years tend to

have overcome many challenges and have built a good reputation (Radipere & Dhliwayo, 2014).

This research also found that the average number of family members of knock-down house entrepreneurs is four people. Research conducted by Breitenbach et al. (2023), states that the number of family dependents can have a significant impact on a person's business. This impact can be positive or negative depending on a number of factors, including the business sector, available resources, and how the business owner manages the situation. This research also states that family responsibilities can be an additional source of motivation for business owners to succeed (Breitenbach & Foguesatto, 2023). They may be more motivated to work hard to provide for their family. However, on the other hand, the number of family dependents can increase financial pressure, especially if the business experiences financial difficulties. Business owners may need to provide for their families, even when the business is not profitable (Breitenbach & Foguesatto, 2023).

In analyzing the gender percentage of entrepreneurs, this research found that all knock-down house entrepreneurs were men. This is related to the behavior of people who view construction businesses such as knock-down houses as a business that can only be done by men. This view is also in line with research conducted by Lashitew (2023) which states that in some societies, which still adhere to strong gender roles, gender can influence the type of business that is accepted or considered suitable. For example, some ventures may be considered "suitable" for men, while others may be considered more appropriate for women. However, research conducted by Abdel-Fattah et al. (2023) shows that in fact, this happens because business preferences tend to be different between men and women.

Apart from this, as can be seen in Figure 1, this research found that almost fifty percent of entrepreneurs have upper secondary education. However, it is also known that more than thirty percent of respondents have junior high school education. Research conducted by Owolabi et al. (2023) states that the level of education has a significant influence on business, including business continuity. This was also mentioned in research conducted by Abdel-Fattah et al. (2023), who said that education provides access to the knowledge and skills needed to plan, start and manage a business well. The higher a person's level of education, the greater their ability to understand business aspects such as accounting, management, marketing and technology.

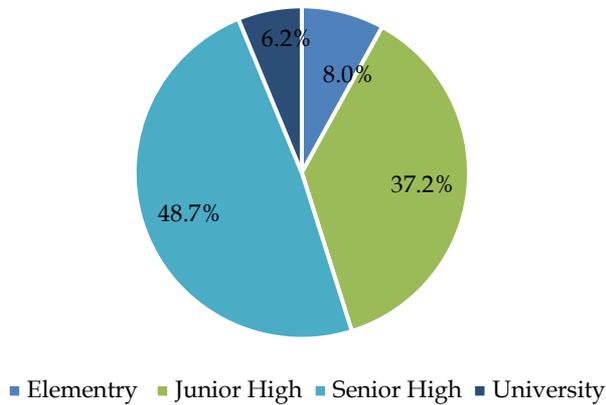


Figure 2. Entrepreneur's formal education

In this regard, Figure 2 shows that only 17.70% of respondents used proof of business agreements in carrying out their transactions. Of all respondents who used transaction evidence which is considered strong in the eyes of the law, 80% had education above or equivalent to senior high school. Based on information released by the Indonesian Ministry of Education, it is known that people who have received 12 years of education or the equivalent of senior high school are considered to have the basic knowledge and skills needed to function as knowledgeable and productive adults. This includes basic skills in reading, writing, arithmetic, as well as understanding fundamental scientific and social concepts (Ministry of Education and Culture Republic of Indonesia, 2023).

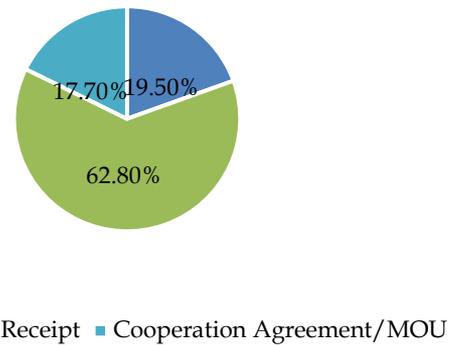


Figure 3. Selling evidence/administration

Figure 3 also explains that almost 20% of entrepreneurs still do not use any evidence in carrying out knock-kown house transactions. Research conducted by Kosadi et al. (2021), says that not having adequate evidence of business transactions can have a significant negative impact on your business. Evidence of business transactions, such as invoices, receipts, contracts, and payment records, are an important part of business track records and administration.

Timber Certification Knowledge

In research conducted by Gautam et al., (2017), it was discovered that one of the main functions of wood-certification is to provide assurance that the wood used in production comes from sustainably managed forests. The certificate shows that the wood was harvested with due regard for the sustainability of the forest ecosystem, including the protection of biodiversity and the rights of local communities. However, in Figure 4 it is known that only 3.50% of South Sumatra knock-down house entrepreneur respondents use certified wood raw materials. In further analysis, it was even discovered that 63% of entrepreneurs were not very interested in certified wood even though they had heard about the use of certified wood.

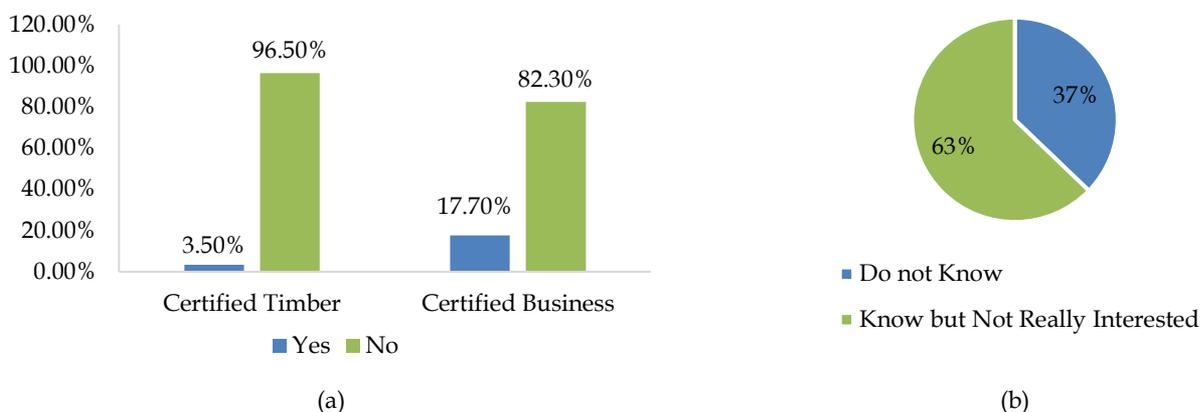


Figure 4. (a) Timber and business certification; (b) Entrepreneurs' knowledge of certified timber

In several studies, it is known that there are several reasons why some entrepreneurs may not use certified wood, even though wood certification can provide many benefits. Certified wood is often more expensive than non-certified wood (Clements et al., 2019; Gautam et al., 2017). The certification process involves additional costs, such as audits and monitoring required to ensure the wood is harvested sustainably. Some entrepreneurs may choose non-certified wood to save costs (Clements et al., 2019). Furthermore, some entrepreneurs may not be fully aware of the benefits of wood certification. They may not know or understand the importance of forest conservation and sustainability in their business. In fact, in Indonesia, wood and forest product-based industries are no longer free to use raw materials. Industrial entrepreneurs in this sector, as processors of wood and forest products, must pay attention to and understand regulatory changes that occur in the field of raw materials and forest products (Daulay, 2015). In 2020, the government of the Republic of Indonesia through the Minister of Trade stated that in fact, timber businesses that utilize forest products and their derivatives must have a business permit issued by the Timber Legality Verification Institute (LVLK), which is an Indonesian legal entity that verifies the legality of wood and has determined by the Minister of Environment and Forestry as the publisher of the Document (Ministry of Trade Of The Republic of Indonesia, 2020). This forest product management permit is also divided into several categories such as natural forest product management permit, production forest product management permit, community plantation forest product management permit (Ministry of Environment and Forestry, 2020). The use of wood as an industrial raw material should not be done haphazardly. Government regulations that respond to market demand which focuses on forest preservation, natural disasters, and the rise of illegal logging, require every wood-based business to have its own business permit (Daulay, 2015).

In fact, the regulations owned by the Republic of Indonesia will also have a big influence on the sustainability of wood-based businesses such as knock-down houses. This is because these regulations are one of the driving factors in creating conducive and directed production (Latifah & Soewarno, 2023). The use of certified raw material sources will strengthen knock-down home businesses in the eyes of the law, improve product quality, and be able to create sustainable sources of raw materials in terms of availability, economics and the environment (Wardana et al., 2022).

Furthermore, by complying with government regulations, knock-down house businesses will be more secure in terms of product marketing, especially the potential for product development for international or

export (Disemadi, 2022). Furthermore, almost 85% of entrepreneurs stated that they also did not have a business certificate or business permit officially issued by the government. In fact, according to research conducted by Disemadi, 2022, it is known that business permits are very necessary in the business development process. Apart from ensuring that the business operates in accordance with applicable regulations and laws, having a business certification or business permit can enable entrepreneurs to gain access to financing, a wider market, access to consumer trust, and even global business access.

Table 3. Correlation between Entrepreneurs' Knowledge and Raw Meterial Preference

	Spearman's rho	Knowledge	Raw Material Chosen
Knowledge	Correlation Coefficient	1.000	.372**
	Sig. (2-tailed)	.	.001
	N	113	113
Raw Material Chosen	Correlation Coefficient	.372**	1.000
	Sig. (2-tailed)	.001	.
	N	113	113

** . Correlation is significant at the 0.01 level (2-tailed)

In this regard, Table 3 explains the relationship between Entrepreneurs' Knowledge and Raw Material Preference. It is known that these two factors have a very significant relationship with a significance level of 0.001. This research is also supported by other research which states that the level of knowledge about certified wood greatly influences the wood selection process (Mračková et al., 2021; Rocchi et al., 2023). An individual or organization that has better knowledge of certified wood will tend to make more conscious and sustainable choices in the use of wood. A person or organization that understands the concept of sustainability will be more likely to seek out and choose certified wood (Poratelli et al., 2022). They will understand that certified wood comes from well-managed forests and adheres to strict environmental standards. Other research states that awareness of the use of certified wood in Indonesia is really needed (Clements et al., 2019).

This is related to its usefulness which is expected to be able to achieve a more sustainable downstream process in the forestry sector. Education about certified wood helps in preserving forests and natural resources. Counseling about certified wood can help players in the forestry industry manage their businesses and forests sustainably ('Apsari, 2016). This can create long-term economic opportunities, as well-managed forests can provide wood resources in a sustainable manner (Göçmen Polat et al., 2023). In connection with this

research, counseling and education related to the use of certified wood is urgently needed. The low level of knowledge of entrepreneurs indicates that the potential for knock-down house development is not yet in line with the level of opportunity for business sustainability.

Conclusion

Using wood in the construction industry, including making wooden houses, can be considered as one of the downstream forest sectors. The forest downstream sector is a practice that converts raw materials from forests into value-added products, such as finished goods, which have a higher economic value than the original raw materials. In this context, wooden houses are value-added products made from wood obtained from forests. The downstream forest sector such as wooden houses has the potential to create higher economic value than simply selling raw wood. This research explains the relationship between Entrepreneurs' Knowledge and Raw Material Preference. It is known that these two factors have a very significant relationship with a significance level of 0.001. This research also found that almost 20% of entrepreneurs still do not use any evidence in carrying out knock-down house business transactions. Furthermore, it is known that only 3.50% of South Sumatra knock-down house entrepreneur respondents use certified wood raw materials. In further analysis, it was even discovered that 63% of entrepreneurs were not very interested in certified wood even though they had heard about the use of certified wood.

Author Contributions

Conceptualization, A.I., M.Y and S.K.; methodology, A.I., M.Y and S.K.; software, A.I.; validation, A.I., M.Y and S.K.; formal analysis, A.I.; investigation, A.I.; resources, A.I.; data curation, A.I.; writing – original draft preparation, A.I.; writing – review and editing, A.I., M.Y and S.K.; visualization, A.I.; supervision, M.Y and S.K.; project administration, A.I.

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Conflicts of Interest

The authors declare no conflict of interest.

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