

Working Time of Women in Natural Silk Agribusiness in Soppeng Regency

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ABSTRACT

Natural silk is an agro-industrial activity that includes aspects of cultivation and related industrial aspects. This study aims to determine and analyse women's time allocation for each activity in the natural silk agribusiness business in Soppeng Regency. The research was conducted from December 2021 to January 2022 in Donri-Donri and Lilirilau Districts, Soppeng Regency. The research method used is descriptive with a quantitative approach and uses calculation analysis by calculating the outpouring of women's work time. Data were obtained through field observations, interviews and by distributing questionnaires. The results obtained are the outpouring of working time based on the analysis of working people's days in mulberry cultivation activities, the working time range is 1-3 hours/day having an average working time of 4.05 Man-days, silkworm cultivation activities have a working time span of 5-8 hours/day has an average working time of 5.05 Man-days, spinning cultivation activities have a working time of 4 - 10 hours/day has an average working time of 0.09 Man-days, weaving activities work time span of 4 - 6 hours /day has an average working time of 0.09 Man-days, and distribution and marketing activities with a working time span of 8 hours/day has an average working time of 13.04z Man-days. The time spent on each sub-system activity in natural silk agribusiness is different because it is influenced by each process carried out in the course of the activity. To maintain natural silk agribusiness actors in each sub-system, the role of Soppeng Regency government must provide direction and assistance and realize programs aimed at advancing the natural silk business in Soppeng Regency.

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Keywords:

Agribusiness; HOK; Natural Silk; Women's Time; Women's Working

1. Introduction

To analyze labor supply involves examining labor supply, which includes family members' choices regarding working hours. Worktime refers to the number of hours dedicated to tasks based on labor productivity. Household members make rational decisions when distributing their work hours according to the nature of the job at hand. Different kinds of jobs necessitate varying amounts of time investment; some roles demand extensive and consistent periods, while others do not. The study of employment within agriculture specifically focuses on the allocation of working hours in this sector. This analysis quantifies the input of working hours into farm work as part of the overall workforce's contribution. (Anindita et al., 2019; Hitani et al., 2017; Munadi, 2021; Sani et al., 2012).

The working hours of women encompass the time they dedicate to various tasks in their daily routines. Women who are employed typically divide their time into two main categories: domestic responsibilities and productive endeavors. The domestic aspect involves fulfilling duties within the household, such as managing household chores, while the productive aspect involves engaging in work outside of home-related tasks, such as office jobs, tending to gardens, caring for livestock, and other similar activities. (Alam et al., 2016; Harahap et al., 2015).

The amount of time that women work has an impact on their role in the agricultural industry. Women's time spent working productively is mostly determined by their family situation and socioeconomic status. The age, number of dependents in the household, pay level, land area, marital status, education level, and experience level are socioeconomic characteristics that affect how much time women farmers labor. When it comes to lowland rice growing, women farmers predominate over men. This indicates that women perform nearly every task involved in the production process—aside from tilling and plow work—and even participate in product promotion (Novita, 2012; Sendow and Wangke, 2018).

Natural silk production is an example of an agro-industrial activity that combines two interrelated industrial and agricultural processes. The cultivation part involves the planting of mulberries as a caterpillar's food, breeding silkworms, and rearing caterpillars until they create cocoons that are ready to be harvested. Concurrently, the industrial part involves turning cocoons into threads and weaving them into silk coverings. This business falls under the category of home-based ventures that are simple to start, require little labor, and generate revenue quickly (Alam et al., 2016).

The fundamental process within the natural silk industry's value chain is segmented into three key sectors, each representing distinct stages from raw material processing to final consumers. The initial sector, known as the upstream segment, involves activities related to preparing raw materials, including mulberry cultivation, egg procurement, and caterpillar rearing. Subsequently, the manufacturing sector encompasses a sequence of silk production processes, such as spinning and weaving. Finally, the marketing sector involves various activities including distribution, sales, and end-user interactions.

Women play a significant role as the primary workforce in the natural silk agribusiness sector. From the initial stages of mulberry cultivation and silkworm rearing to yarn spinning, weaving, and the production of silk fabric, women are extensively involved in various aspects of the silk industry. Their contributions are crucial in bolstering the entire silk value chain. Despite their substantial involvement, many women in natural silk agribusiness continue to face poverty. Among them are single mothers, widows, and unmarried women who often serve as the primary breadwinners for their families (Regional Development Planning, Research and Development Agency South Sulawesi Province, 2021).

The agribusiness of natural silk is one of the best academic subjects to be explored. Studies on the agribusiness of natural silk are many. As research from Alam et al., (2016) It examines women's productive roles in the natural silk industry and their involvement in household duties in Pising Village, Donri-Donri District, Soppeng Regency. This study looks at how women split their time between being housewives, which is a household task, and being productive, which is raising silkworms. Also, research from Firsal et al., (2021) said, most mulberry farmers who produce natural silk are female

laborers. Research by Rusdi et al. (2021) highlights that Soppeng Regency possesses favorable geographical conditions for silkworm cultivation, evident in its stable climate and ample available land. Despite these conducive factors, there has been a decline in public interest in silkworm farming due to its traditional and hereditary nature, resulting in only a few specific regions serving as focal points for this industry.

South Sulawesi Province is a key region for natural silk production in Indonesia, contributing significantly to the national silk yarn output, accounting for 70% to 80% (Nuraeni, 2017). Natural silk is highly valued as a prominent non-timber forest product in South Sulawesi, reflecting the region's strong interest in this industry (Nurhaedah and Bisjoe, 2013). The expansion of natural silk agribusiness in Soppeng Regency has led to an increased demand for labor. Women play a crucial role in driving the growth of this sector and currently constitute the primary workforce in natural silk agribusiness within Soppeng Regency.

Recent data from the Regional Development Planning, Research, and Development Agency of South Sulawesi Province (2021) indicates a decline in male workers within the natural silk agribusiness. Traditionally engaged in mulberry farming and serving as primary providers, men are transitioning to other crops due to familial responsibilities. Consequently, women have assumed a central role as the primary labor force in sustaining natural silk production. Understanding the time allocation of women engaged in natural silk agribusiness in Soppeng Regency is essential for effective management and planning within this sector.

2. Materials and Methods

The location in this research is Soppeng Regency, which consists of two sub-districts, namely Donri-Donri District and Lilirilau District. The research location was chosen because the area is one of the silk-producing areas in Soppeng Regency. This research was conducted in December 2021 to January 2022. The research method used is descriptive research method with a quantitative approach. The sampling in this study were 39 natural silk agribusiness actors, consisting of the upstream sector, namely 2 actors in the mulberry cultivation process and 12 actors in the silkworm cultivation process, then in the manufacturing sector, namely 8 actors in the spinning process and 6 people in the weaving process as well as in the distribution and marketing process are generally carried out in Soppeng Regency with the brand name "Cantika Sabbena". Analysis of the data used is descriptive statistics by calculating the outpouring of women's working time. The result of the conversion is that one man's day is assessed as one man's working day (MWD) with 8 hours of work per day, using *Man-days* units. According to Hernanto in Zahasfana et al., (2017), the formula for finding *Man-days* is as follows:

$$Man-days = \frac{(\text{Number of Workers} \times \text{Working Days} \times \text{Working Hours} \times \text{Types of Labor})}{8 \text{ Hours}}$$

Information:

Man-days = Working
MWD = Male Working Day
1 MWD = 8 Hours

Type of Workforce: - Women	= 0.8
- Child	= 0.5
- Male	= 1
- Machine	= 3

3. Results and Discussion

3.1. Outpouring of women's working time on natural silk agribusiness in Soppeng Regency

Working time is the proportion of working time devoted to carrying out certain activities in the agribusiness and industrial aspects to the total working time. There are types of work that require a lot of and continuous working time and there are also types of work that require little or limited work time (Palabiran, 2015). The time devoted by women workers in doing a job will take up part of the time from household activities. Women workers have a dual role where women workers have a domestic role (household) and a productive role (in natural silk agribusiness). In the natural silk agribusiness, the time spent by women workers varies based on the activities in each sub-system. The following is the outpouring of women's working time from each activity in the natural silk agribusiness in Soppeng Regency which is seen based on the analysis of the working day (*Man-days*):

Table 1. Amount of Women's Work Time Outpouring in Natural Silk Agribusiness in Soppeng Regency

No	Types of Activities	Number of Respondents (People)	Working Hours Range (Hours/Day)	Average Working Hours (Hours/Day)	Working Days Range	Average Working Day (Days)	Average <i>Man-days</i>
1.	Mulberry Cultivation	12	1 - 3	2	60	60	4.05
2.	Silkworm Cultivation	12	5 - 8	6.25	25	25	5.05
3.	Spinning	8	4 - 10	6.38	1 - 2	1.13	0.09
4.	Weaving	6	4 - 6	5.5	1 - 4	1.83	0.09
5.	Distribution and Sales	1	8	8	14	14	13.04
Total		39	-	-	-	-	-

Source: Primary Data, 2022.

Based on Table 1, it can be seen that the total number of respondents in this study amounted to 39 people divided into several sub-systems of activity. The length of time women work in each activity is different which is influenced by several factors. The explanation of the outpouring of women's working time in each sub-system of natural silk agribusiness in Soppeng Regency can be seen as follows:

3.1.1. Mulberry Cultivation

In mulberry cultivation activities carried out by 12 respondents, it took 1 to 3 hours per day so the average working hours was 2 hours/day. So, the average working time of women mulberry farmers in Soppeng Regency is 4.05 *Man-days*. The mulberry cultivation activity takes 180 days in one production which consists of the land preparation process, the management process, the mulberry plant maintenance process,

the fertilization process, and the harvesting process for mulberry plants that are ready to be used as feed for silkworms. Meanwhile, women workers only need to work for approximately 60 days because they only play a role in the maintenance and fertilization process.

Mulberry cultivation activities carried out by women mulberry farmers in Soppeng Regency are sometimes assisted by their husbands (male workers) so that the outpouring of women's working time is small, this is because each process in mulberry cultivation requires greater energy, especially in the preparation process. land, management processes, and harvesting processes so that male workers play a major role in mulberry cultivation activities. Women mulberry farmers are more involved in the maintenance and fertilization process. The maintenance process consists of pruning and weeding activities carried out when the plants are old (entering the rejuvenation time), this process can be repeated 3 to 5 times in one planting period. Then the fertilization process is carried out when the plant is 7-10 days after pruning (when the shoots come out of young leaves), and fertilization is carried out at the end of the rainy season, the beginning of the rainy season, and between the rainy and dry seasons. Meanwhile, in the harvesting process, women mulberry farmers do not play a big role because the harvested mulberry leaves will be brought to the silkworm cage and this requires more energy.

Based on the explanation of the activities carried out by women mulberry farmers above, it can be seen that women play a role in a simpler process and use a relatively flexible and short time. This follows the opinion of Firsal et al. (2021) which states that the mulberry plant is cultivated by the community because this plant is a shelter for silkworms and the main feed for silkworms in carrying out these mulberry cultivation activities, decision making is entirely carried out by women farmers, namely in making decisions on the selection of production facilities and labour, except for land clearing and planting activities that involve the role of the family.

3.1.2. *Silkworm Cultivation*

In silkworm cultivation activities carried out by 12 respondents, it took 5 to 8 hours per day so the average working hours of women silkworm farmers was 6.25 hours/day and this activity took 25 days each for one production time. So, the average working time of women silkworm farmers in Soppeng Regency is 05.05 *Man-days*. In silkworm cultivation, the activities carried out are activities that are repeated every day, namely the preparation of feed, feeding, cleaning the cage, and cleaning the equipment used.

In silkworm cultivation, there is a process called Caterpillar Sleep Day/Instar and in Bugis language it is called *Matinro Ulle'*. In the feed preparation process, women silkworm farmers prepare caterpillar feed, namely mulberry leaves taken from their mulberry gardens. Feeding is carried out 3 times a day and takes 1-2 hours consisting of taking leaves in the garden and removing leaves that are brought to the silkworm cage. In this process, sometimes women silkworm farmers are assisted by their husbands because bringing the leaves to the cage requires more energy. The next process is the process of feeding caterpillars. Where in this process, women silkworm farmers must be careful and timely because it will affect the success of silkworm production. The feeding process was carried out 3 times a day, namely at 05.00 - 06.00, 10.00 - 11.00 and 17.00 - 18.00. Of the 25 total days of maintenance, feeding was only carried out on the 1st day, 5th day, 7th day, 8th day, 10th day, 11th day, 12th day, and 14th day. until the 18th day. Then on the 4th day, the 6th day, the 9th day, and the 13th day, the silkworms were not given food because that day was the instar (sleeping day) for the silkworms.

Furthermore, if the silkworm has entered the 19th day, then the silkworm has turned into a cocoon and requires 6-7 days for the silkworm to be ready to be harvested. In the process of changing silkworms into cocoons, women silkworm farmers begin to sort out which cocoons are suitable to use. This activity is called the "cooking" activity. This activity takes 6-8 hours per day and is carried out for 2 days, this is because women workers must see one by one the good cocoons that are suitable for use. If the cocoons have been harvested, then the time limit for spinning is a maximum of 1 day, unless the cocoon oven process is carried out which can make the cocoons resistant to storage for 1-2 months.

In the cultivation of silkworms, the maintenance and sterilization of the cages and equipment are carried out by taking into account the environmental conditions of the silkworm cultivation where the room temperature greatly affects the state of the silkworms as well as the cleanliness and sterilization of the place. Usually in carrying out sterilization, women silkworm farmers use blur and chlorine as assistance. This is following the opinion of Nurhaedah and Bisjoe (2013) which states that the length of time or the short period of maintenance of silkworms is influenced by biophysical conditions, especially weather. If the weather is hot, especially during the dry season, the caterpillar's lifespan is shorter than during the rainy season and a long maintenance period will affect the use of feed and labour.

3.1.3. Spinning Activities

Based on the spinning activities carried out by 8 respondents, it takes 4 to 10 hours per day so the average women spinning hours is 6.38 hours/day and this activity takes 1-4 days each for one production. So, the average working time of women spinners in Soppeng Regency is 0.09 *Man-days*. The use of women's spinning time in spinning activities depends on the women's willingness to work. Where if they do more domestic (household) activities, spinning activities are carried out as a side job or carried out in their spare time.

In spinning activities, before the cocoon is spun, cooking is carried out using water prepared in a container/pan. Boiling is done for 15 minutes or until the threads on the cocoons have come out. After that, the cocoons are taken and put on the spinning /reeling. To help remove the fibers of the yarn, the women spinners use eggplant leaves. The fibers of the cocoons are then spun into coils of yarn.

Furthermore, after the thread has been finished, it is transferred to a thread spooling device or what is called a *rereeling*, where the tool is used to make the thread roll neatly. In carrying out one spinning activity, the women spinner cannot leave the tool and must continue to be monitored and supervised because the spinning tool uses non-machine tools or tools that still use a human power system to control it. This follows the opinion of Nurjayanti (2011) which states that spinning activities consist of *boiling* (cocoon boiling), *reeling* (spinning), *reeling*, and pressing.

3.1.4. Weaving Activities

The next activity is weaving carried out by 6 respondents using 4 to 6 hours per day so that the average working hours of women weavers is 5.5 hours/day and this activity takes 1-4 days each for one time. production. So, the average working time of women weavers in Soppeng Regency is 0.09 *Man-days*. In this activity, women weavers use an

uncertain time every day, because they are influenced by domestic activities (household), and also weaving activities require precision and patience, so women weavers must be in the good physical condition and a good mood.

In carrying out weaving activities, the tool used is a machine loom which is still simple because it is made of wood and blocks which are then controlled by stepping on a pedal located at the bottom of the tool. However, based on the opinion of weavers in Soppeng Regency who feel that the loom used is a tool that is still a manual loom. This weaving activity consists of the process of inserting the thread into the needles contained in the machine loom, where the needles are 100 pieces in each tool and have a very thin distance so that in carrying out this process requires great accuracy and takes 1-2 hours to complete with one machine loom. The next process is the weaving process. In this process, the average women weaver takes 1 hour 30 minutes to produce 1 meter of genuine silk fabric using 5-6 kg of silk thread. In weaving, accuracy is needed because sometimes there are conditions of broken threads and overlapping threads so the weavers have to improve the condition of the threads used.

Apart from using simple machine looms made of wood, women weavers also use manual looms called "*walidah*" which are used to produce silk in the form of silk. Using *walidah*, women weavers devote 4 hours a day and take 4 days to 2 months to produce one genuine silk sarong which is usually 55 cm x 380 cm and 62 cm x 400 cm. Weavers in Soppeng Regency have their principle that in doing weaving activities, one must be in a good mood and require very high patience. If the weaving is done in a bad mood, there will be difficulties in the form of intermittent threads, threads that come off the needle, and so on. Therefore, women weavers devote uncertain time every day to weaving activities. This is following the opinion of Wiguna et al. (2019) which states that people do weaving using a tool called a non-machine loom that is driven by human power and can be used sitting or standing and requires expertise in its use.

3.1.5. *Distribution and Marketing*

The last activity is distribution and marketing activities carried out by the Cantika Sabbena brand, where this activity takes 8 hours/day with an average working day of 14 days and has an outpouring value of 13.04 *Man-days*. The Cantika Sabbena brand produces genuine silk in the form of silk fabrics and silk sarongs. The Cantika Sabbena brand sells online using social media Whatsapp and Instagram as well as direct sales at the Gallery Deskranasda Soppeng. In addition, the Cantika Sabbena Brand also markets its silk products through exhibitions.

The sale of genuine silk by Brand Cantika Sabbena takes a long time because consumers who are interested in genuine silk are very rare. Currently, many consumers prefer silk fabrics that use artificial threads because they are cheaper, have a variety of motifs, and are easier to handle. Customer demand for genuine silk fabrics and silk sarongs increases during the exhibition. Therefore, Cantika Sabbena does not have a fixed time to produce genuine silk, this is because the time it takes to produce genuine silk takes 3 - 4 months and also there are no regular customers who always want to buy genuine silk fabrics. This follows the opinion of Yunus (2017), which states that the problems that arise in the distribution of natural silk, one of which is a fairly wide market but has not been utilized optimally because of the gap between the products produced and consumer preferences, as well as the existence of competing products that use yarn. imitation and marketed at a relatively lower price so that to attract the attention of consumers an effective marketing system is needed.

There is a chain of cooperative relationships carried out by Brand Cantika Sabbena with several actors in the upstream and manufacturing sectors in the natural silk agribusiness business in Soppeng Regency. Where Brand Cantika Sabbena chose to buy silk thread to be used for upstream sector actors in Donri-Donri District. Then in the manufacturing sector, Brand Cantika Sabbena collaborates with some weavers in Lilirilau District and also has partners in other districts.

Characteristics of respondents also affect the performance of women in each sub-system of activities. The productive age of the women workers in cultivating mulberry, silkworm cultivation, spinning activities, weaving activities, and selling silk fabrics, which are generally at a productive age or relatively young, is an advantage because productivity in working rationally is influenced by physical strength and thinking abilities that enable women workers to get innovations in the activities they do. As well as the ability to improve skills in accepting new technologies and devote their working time to every activity carried out in the natural silk agribusiness business.

4. Conclusion

Based on the results and discussion, it can be concluded that from each sub-system activity in the natural silk agribusiness in Soppeng Regency, there is a total outpouring of women's working time based on the Working People's Day analysis, namely: (a) mulberry cultivation activities, the working time is 1 - 3 hours/day has an average working time of 4.05 *Man-days*, (b) silkworm cultivation activities have a working time of 5 - 8 hours/day has an average working time of 5.05 *Man-days*, (c) cultivation activities spinning work time of 4 - 10 hours/day has an average working time of 0.09 *Man-days*, (d) weaving activities work time of 4 - 6 hours/day has an average working time of 0.09 *Man-days*, and (e) distribution and marketing activities with a working time of 8 hours/day having an average working time of 13.04 *Man-days*.

Analysis of the time spent working in each sub-system activity was carried out to find out how much time was used by women in the natural silk agribusiness business in Soppeng Regency. The time spent from each sub-system activity in the natural silk agribusiness in Soppeng Regency has a different total working time for women because it is influenced by every process carried out in the course of the activity. To maintain natural silk agribusiness actors in each sub-system, the role of the Soppeng Regency government must provide direction and assistance and realize programs aimed at advancing the natural silk business in Soppeng Regency, to attract attention and motivation for actors in each sub-system of activities.

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