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Forestry Extension Performance in Enhancing Forest Farmer Knowledge and Skills: A Case Study in Tompobulu, Maros Regency

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Forestry Extension Workers, as one of the important parties in maintaining and preserving forest resources in Indonesia, are expected to have an understanding of good extension methods and techniques so that farmers around the forest can improve their knowledge and skills in managing and utilising forest products. This study aimed to assess the performance of forestry extension workers in Tompobulu District. And also evaluate their role in enhancing the knowledge and skills of forest farmer groups in Maros Regency. It was located in six villages, namely Bonto Somba Village, Bonto Manurung, Bonto Matinggi, Bonto Manai, Tompubulu, and Pucak Maros Regency with the number of samples in the study was 57. The study employed qualitative descriptive analysis using a Likert scale, and quantitative analysis using the t-test. The performance of forestry extension workers that significantly influences increasing the knowledge and skills of forest farmer groups consists of six indicator components, namely: facilitating forest farmer groups to prepare forest product utilisation maps; facilitating forest farmer groups to prepare annual work programs and plans; facilitating forest farmer group members to improve human resource quality; facilitating forest farmer groups to disseminate or spread information on forest product technology; facilitating forest farmer groups to grow their empowerment and independence; and facilitating forest farmer groups to increase production results of superior forest product commodities. Meanwhile, the performance of forestry extension workers that does not significantly influence increasing the knowledge and skills of forest farmer groups is Facilitating Business Partnerships Between Forest Farmer Groups, Entrepreneurs, and the Government, Facilitating Forest Farmer Groups to Access Business Capital with Financial Institutions, Banks, and the Government; and Facilitating Increasing the Income and Welfare of Forest Farmer Groups.

Keywords: Forest extension workers, Community forest, Sustainable forestry, Knowledge and skills, Forest management.

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1. Introduction

Forestry Extension Workers, who play a crucial role in the maintenance and preservation of Indonesia's forest resources, must possess a comprehensive understanding of effective extension methods and techniques that farmers and surrounding communities can adopt. Every extension worker must possess forestry extension, a form of learning innovation in the forestry sector, to improve knowledge and develop technology. This knowledge is then transferred to farmers and communities around the forest, enabling them to become more knowledgeable, understand, possess skills, and have the ability to develop the utilisation of forest resources and preserve the area's forests. This, in turn, will increase the economic and ecological value of forest resources, as well as the income and welfare of the community in the future (Harinta YW, 2016). Innovative forestry extension learning is necessary to enhance effective forestry extension methods and techniques, enabling extension workers to transfer their knowledge and skills more effortlessly. This, in turn, facilitates the understanding and acceptance of the knowledge and skills by communities surrounding the forest (Indri Rafiani et al., 2016). We need a variety of innovations in forestry extension learning to boost the enthusiasm of forestry extension workers in delivering extension services to forest farmers and surrounding communities, making the information more valuable and simpler to implement in forest product management, utilisation, and forest sustainability (Mardikanto, 2013). Furthermore, a forestry extension worker requires performance to fulfill his responsibilities as the leader in managing forest resource utilisation, preservation, and the quality of forest product production. Good forestry extension worker performance will have a positive impact on increasing forest products, increasing the ecological value of forest resources, and improving the welfare of farmers and communities around the forest (Sapar Amri Jahi et al. 2015). Good-performing forestry extension workers can positively influence forest farmers and surrounding communities by implementing techniques and methods for utilizing forest resources in the field. This, in turn, helps farmers comprehend and implement the learning outcomes of forestry extension, thereby enhancing the economic and ecological value of forest resources in the forest area (Sufiani Suhanda et al., 2015).

Forestry extension workers in Tompobulu District, which are generally located in the People's Forest area, have contributed to the preservation of forest resources in the area. Data from KPH Bulusarauang, Maros Regency, in 2020 showed that the level of forest land degradation in Tompobulu District decreased from 226 ha/year in 2010 to 127 ha/year in 2020, or approximately 100 ha. In addition, the utilisation of forest products that provide economic value to the community is increasing, especially non-timber forest products such as aren, pine sap, coffee, candlenut, and other forest products. The decreasing level of land degradation and the increasing economic benefits obtained by the community from the utilisation of forest products are proof that forestry extension workers have contributed to the utilisation of forest products both ecologically and economically through community forestry patterns or social forestry and agroforestry patterns. The performance of excellent forestry extension workers is very necessary in order to support self-sufficiency and food sovereignty in the forestry sector and improve the quality of forest resource sustainability in Indonesia. The impact of the performance of forestry extension workers plays a very positive role in the utilisation of forest resources that have economic value so that it can increase the production of forest resources, especially non-timber forest products (NTFPs). The development of forestry extension and technology dissemination and the marketing process of forest products that have an impact on the income and welfare of forest farmers and communities around the forest are the impacts of the performance of good forestry extension workers (Tiara Aprilia Hernada et al., 2015).

Furthermore, usually found in the Private Forest, Tompobulu District forestry extension workers have helped to preserve the local forest resources. Based on statistics from KPH Bulusarauang, Maros Regency, in 2020, the degree of forest land degradation in Tompobulu District dropped from 226 ha/year in 2010 to 127 ha/year in 2020, or almost 100 ha. Furthermore, the use of forest products with financial worth for the society is rising. It occurred especially for non-timber forest products including coffee, candlenut, aren, pine sap. Positively, the declining degree of land degradation and the rising economic benefits, acquired by the community from the use of forest products, show that, by means of community forestry patterns or social forestry and agroforestry patterns, forestry extension workers have contributed to the use of forest products both ecologically and economically. Excellent forestry extension workers are quite essential to support food sovereignty and self-sufficiency in the forestry sector as well as to raise the standard of forest resource sustainability in Indonesia. Especially non-timber forest products (NTFPs), the performance of forestry extension workers has a very positive influence on the use of forest resources with economic value so that their output may rise. The results of good forestry extension workers are the marketing process of forest products that affect the income and welfare of forest farmers and communities surrounding the forest as well as the distribution of forestry extension technologies (Tiara Aprilia Hernada et al., 2015).

However, the extent to which forestry extension workers enhance the knowledge and skills of forest farmer groups in the Community Forest area of Tompobulu District remains scarce, marking a significant breakthrough in the forestry sector's understanding of the role of these workers in managing and utilising forest products in Tompubulu District. We hope that this research's results will shed light on the effectiveness of forest extension workers in Maros Regency, particularly in enhancing the

knowledge and skills of forest farmers in Tompobulu District, Maros Regency.

2. Method

This research was conducted in six villages in Tompobulu District, Maros Regency. The population is all farmers who utilise forests as their additional economic source, with a total of 571 people and a sample size of 10%, namely 57 people. We employ a proportional sampling method, based on the number of forest farmer group members in each village. Next, we conduct random sampling to collect the samples. For more details, the number of samples taken can be seen in the table below:

Table 1. Number of population and sampel

No	Villages	Number of groups	Population	Sampel size (10 %)
1	Bonto Somba	5	136	14
2	Bonto Manurung	4	122	12
3	Bonto Matinggi	3	104	10
4	Bonto Manai	2	83	8
5	Tompubulu	2	88	9
6	Pucak	1	38	4
	Total	**17**	**571**	**57**

Source: Data from Tompobulu District Government 2021.

This study uses two forms of analysis, namely qualitative descriptive analysis and quantitative analysis. The study employs qualitative descriptive analysis using a Likert scale to analyze the performance of forestry extension workers in enhancing the knowledge and skills of forest farmers. The t-test analysis, using the following formula, scrutinizes the performance of forestry extension workers in enhancing the knowledge and skills of forest farmers in Tompubulu sub-district.

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \text{ or } t = \frac{\beta n}{S\beta n}$$

t =Significance value (t count) which will be compared with t table
r = Correlation Coefficient
n = number of samples
βn = Regression Coefficient of Each Variable
Sβn =Standard Error of Each Variable (Soekidjo, Notoadmodjo, 2012)

Meanwhile, according to Sugiyono, 2017, the performance categories of forestry extension workers can be explained as follows:

Table 2.Performance Categories of Forestry Extension Workers

No	Interval	Categories
1	0 – 57	Poor
2	58 - 116	Moderate
3	117 – 173	Good
4	174 - 230	Very Good

Source: Authors' Analysis of Data, 2021

3. Result and Discussion

This study revealed that there exist nine different ways of Forestry Extension performance improving farmer knowledge and skills. These forms comprise: 1) the contribution of Forestry Extension to the preparation of forest product utilisation maps; 2) the performance of Forestry Extension in enabling the annual work plans for Forest Farmer Groups; 3) the performance of Forestry Extension in enabling the preparation of forest potential data in the working area of Forest Farmer Groups. 4) The way Forestry Extension shares knowledge on Forest Product Technology to Forest Farmer Groups 5) Performance of Formal Business Enterprises of Forest Farmer Groups and Forestry Extension in Developing Empowerment and Independence, 6) Performance of Forestry Extension in Promoting Cooperation between Forest Farmer Groups and Entrepreneurs in the Forestry Industry, 7) Performance of Forestry Extension in Facilitating Forest Farmer Groups in Accessing Production Facilities, Financial Institutions, and Marketing Forest Product Production Results, 8) Extension for Forestry The performance of Forestry Extension Workers in increasing the income and welfare of members of the Forest Farmer Group; also, Forestry's performance in improving the use of forest products for superior commodities by the Forest Farmer Group. Consider the following to help to clarify the performance of forestry extension workers in Tompobulu District, Maros Regency.

1) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Preparing Forest Product Utilisation Maps

The assessment of the forest farmer group on the performance of forestry extension workers in facilitating the preparation of forest product utilization maps in their area and their benefits for members of the forest farmer group is very good, as many as 41 people with a total value of 164 or 80%, and forest farmers who consider the performance of forestry extension workers good are as many as 10 farmers with a total value of 30 or 14.63%. To see the extent of the assessment of the performance of forestry extension workers in facilitating members of the forest farmer group in preparing forest product utilization maps in their area, it can be seen in the table below:

Table 3. Results of Forestry Extension Worker Performance in Facilitating Forest Farmer Groups in Compiling Forest Product Utilization Maps in Tompobulu District, Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	41	164	Very Good
2	3	10	30	Good
3	2	5	10	Moderate
4	1	1	1	Poor
	Total	**57**	**205**	

Source: Authors' Analysis of Data, 2021

Table 3 above reveals that forestry extension workers assist members of the forest farmer group in creating a map of forest product utilisation in their area, which ranges from moderate to poor, with a total score of 11 (5.36%). Overall, we can see the members of the forest farmer group believe that forestry extension workers have done an excellent job of assisting farmers in compiling a map of forest product utilisation in their area, with a percentage value of 80%. Almost all forest farmer groups believe that the forestry extension workers' facilitated map of forest product utilisation greatly aids them in developing their forest product utilisation system. It also helps them understand the potential of available forest resources, enabling them to effectively utilize non-timber forest products like Aren, Lebah Maru, pine resin, and other forest products, while also aiding in the management and preservation of their forests. This aligns with the research findings of Irninthya Nada et al. (2021), which indicate that forestry extension workers in Pinrang Regency have assisted forest farmer groups in creating maps of potential forest resources, particularly non-timber forest products. These maps, created through the facilitation process by forestry extension workers, not only enhance the knowledge of forest farmers in utilizing forest resources in social forestry areas, but also contribute significantly to the economic well-being of the surrounding communities.

2) Performance of Forestry Extension Agents in Support of Forest Farmer Groups in Planning Annual Work Programs and Policies for Forest Farmer Groups

From the results of this research that has been conducted, the assessment of farmers on the performance of forestry extension workers in facilitating forest farmer groups in compiling annual farmer group programs and work plans in their areas that are very good is 47 people with a total value of 188 or 89.09%, and the forest farmer group that said good about the performance of forestry extension workers is 5 people with a total value of 15 or 7.11%. The table below illustrates the extent to which extension workers excel in creating annual farmer group programs and work plans that yield benefits for farmers:

Table 4. Results of Forestry Extension Worker Performance in Assisting Farmers to Compile Annual Farmer Group Programs and Work Plans in Tompobulu District, Maros Regency.

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	47	188	Very Good
2	3	5	15	Good
3	2	3	6	Moderate
4	1	2	2	Poor
	Total	**57**	**211**	

Source: Authors' Analysis of Data, 2021

Table 4 clearly shows that the performance of forestry extension workers in helping forest farmer groups in developing annual programs and work plans, both good and poor, varies between 3 and 2 individuals, so producing a total score of 8, or 3.79%. With a percentage value of 89.09%, members of the forest farmer group evaluate that forestry extension workers have performed quite well in helping them to prepare programs and work plans for their particular regions. This is because of the collective ability of forestry extension workers to assist farmer groups in formulating annual programs and work plans, considering regional conditions, addressing issues faced by these groups, developing work plans for annual and 5-year cycles, and formulating activity requirements and budgets for submission to the government concerning the use of forest products in their respective regions. According to Adriana et al. (2021), the vital function of forestry extension workers in Gowa Regency is to support forest farmer groups in planning and carrying out their annual and 5-year work programs and plans. Compiling these programs and work plans has helped the forest farmer groups benefit from the conditions and capabilities of the forestry extension workers, so enabling them to create forest use and conservation systems in their particular areas.

3) Performance of Forestry Extension Workers in Facilitating Forest Farmer Group Members in Improving Human Resources Quality

From the findings of this research, the assessment of the Forest Farmer group on the performance of forestry extension workers in facilitating members of the Forest Farmer group in improving the quality of human resources of Forest Farmer Group Members is included in the very good category as many as 21 people with a total value of 84 or 50.29%, and members of the Forest Farmer Group who claimed that the performance of Forestry Extension Workers was good were 16 Farmers with a Value of 48, or 28.74%. The extent to which the performance of

forestry extension workers improves the human resource quality of forest farmer group members in Tompubulu District is shown in the table below.

Table 5. Performance of Forestry Extension Workers in Supporting Members of Forest Farmer Groups in Improving Tompobulu District, Maros Regency Human Resource Quality

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	21	84	Very Good
2	3	16	48	Good
3	2	14	28	Moderate
4	1	7	7	Poor
	Total	**57**	**167**	

Source: Authors' Analysis of Data, 2021

Table 4 reveals that the effectiveness of forestry extension workers in enhancing the human resource quality of forest farmer group members, both moderate and poor, stands at 21 individuals, resulting in a total score of 35, or 20.95%. Thus, overall, the performance of extension workers in facilitating forest farmer group members to improve the quality of their human resources in their area is included in the very good and good categories with a percentage value of 79.03%. It because to the belief among forest farmer group members that forestry extension workers have been able to gradually enhance their understanding, knowledge, and skills, and thereby changing the mindset of farmers in the forest utilisation system. This has been achieved by facilitating their participation in various activities such as training, comparative studies, demonstration plot activities, nursery activities, and other technological innovations such as agroforestry management systems, honey bee cultivation, and the use of palm sugar. The presence of forestry extension workers greatly aids members of forest farmer groups by providing them with the latest information and knowledge, enabling them to shift their mindsets towards a more advanced and modern approach to increasing their forest product production. While they may not have fully embraced the knowledge and technology, they have nonetheless provided sufficient knowledge and information for their collective benefit. This is also in line with the research results of Makmur, M., et al. (2019), which state that agricultural extension workers in Polewali Mandar Regency have provided a lot of increased knowledge, technology, and skills to farmers in cultivating the rice plants they manage. The abundance of knowledge and technology possessed by farmers will lead to an increase in farmer human resources, enabling them to cultivate rice plants with appropriate technology.

4) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups to Disseminate or Spread Information on Forest Product Technology

The assessment of the forest farmer group on the performance of forestry extension workers in facilitating them to conduct dissemination or disseminate forest product technology in their area, which is very good, included as many as 21 people with a total value of 82, or 51.25%, and those who stated that the performance of forestry extension workers by members of the forest farmer group was good were 15 people with a total value of 45, or 28.13%. The table below illustrates the effectiveness of extension workers in providing members of the forest farmer group with information on forest product technology.

Table 6. Results of Forestry Extension Worker Performance in Facilitating Members of the Forest Farmer Group in Disseminating Information on Forest Product Technology in Tompobulu District, Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	21	84	Very Good
2	3	15	45	Good
3	2	12	24	Moderate
4	1	9	9	Poor
	Total	**57**	**152**	

Source: Authors' Analysis of Data, 2021

Table 6 reveals that the forest farmer group members, with a total of 34 and a percentage of 20.62%, perceive the forestry extension workers' performance in facilitating the dissemination of forest product technology in their area as satisfactory or poor. Overall, the forest farmer group believes that forestry extension workers have performed exceptionally well in disseminating forest product technology to its members, as evidenced by a percentage of 79.38. This is because forestry extension workers have been able to facilitate the dissemination of forest product technology to farmers for at least 3 types of forest product technology, namely the use of palm sugar processing technology into brown sugar or ant sugar, honey bee cultivation technology, agroforestry management technology, and other technologies. Additionally, forestry extension workers have facilitated the dissemination of forest product technology to several forest farmer groups, including KTH Ujung Bulu, KTH Betara Bersatu, and KUPS Aren Jaya. With the facilitation of forest product technology, forest farmer groups have also received assistance in the form of forest product management equipment from the government. For example, KTH Ujung Bulu has received assistance in the form of a palm sugar and batok sugar making machine, and KTH Betara Bersatu has received a coffee drying machine and a coffee grinding machine. This is also in accordance

with the results of the Hidayat A study (2021), which stated that forestry extension workers in Bone Regency have been able to facilitate forest farmer groups in utilising forest product technology, especially non-timber forest products like pine sap. With pine sap processing technology, farmers are greatly assisted in separating the water content in pine sap so that the quality of the pine sap produced is getting better. Even with this facilitation, KTH Mappideceng in Bontocani Village, Bone Regency, has received assistance in the form of a pine sap water content separator machine from the results of coaching and mentoring carried out by forestry extension workers.

5) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Developing Their Empowerment and Independence

From the results of this research, the assessment of the forest farmer group on the performance of forestry extension workers in facilitating members of the forest farmer group in growing their empowerment and independence which is very good as many as 16 people with a total value of 64 or 42.95%, and farmers who are good at the performance of forestry extension workers are 15 people with a total value of 45 or 30.20%. The table below illustrates the extent to which forestry extension workers have contributed to the empowerment and independence of members of the forest farmer group.

Table 7. Results of Forestry Extension Worker Performance in Facilitating members of the forest farmer group in Growing their empowerment and independence in Tompobulu District, Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	16	64	Very Good
2	3	15	45	Good
3	2	14	28	Moderate
4	1	12	12	Poor
	Total	**57**	**149**	

Source: Authors' Analysis of Data, 2021

Table 7 demonstrates that the performance of Forestry Extension Workers in assisting members of forest farmer groups to enhance their empowerment and independence in Tompobulu sub-district is both moderate and poor, with a total value of 26 individuals and a percentage of 26.84%. Overall, members of the forest farmer group still consider the performance of forestry extension workers in enhancing the empowerment and independence of farmers to be very good, with an overall value of 73.16%. This is because farmers assume that forestry extension workers in Tompobulu sub-district have been able to form a legal entity forest farmer group by issuing a decree from KPH Bulusarauang and village heads such as KTH Ujung Bulu and KPH Ujung Loe, who have received a decree from KPH Bulusaraung and the Head of Bonto Manurung Village. Forestry extension workers have also been able to facilitate the formation of forest farmer group business entities such as KUPS AREN JAYA, which has received Halal certification and Ministry of Health certification for palm sugar products in Bonto Manurung Village. In addition, the KTH Betara Bersatu Business Entity has also been formed in Bonto Manai Village, which has created a honey bee business entity with the issuance of Halal and Ministry of Health Certification from the honey bee business, so that the KTH is able to increase the empowerment of forest farmer groups through the productive efforts they carry out, including increasing the income of forest farmer groups from the forest products they have produced. Research by Hardianto, B. (2021) confirms that the presence of forestry extension workers in Banyuwangi has benefited forest farmer groups. They have aided in the establishment of the Prosperous Forest Farmer Group Business Entity in Wonosari Village, Tasikmalaya Regency. This entity has developed and marketed its honey bee products in Tasikmalaya Regency. The presence of forestry extension workers empowers forest farmer groups and boosts their additional income from their honey bee business, thereby safeguarding the forests in Wonosari Village.

6) Performance of Forestry Extension Workers in Facilitating Business Partnerships Between Forest Farmer Groups, Entrepreneurs and the Government

The performance of forestry extension workers in facilitating partnerships between forest farmer groups, entrepreneurs, and the government in general is as follows: the performance of forestry extension workers who are very good is 1 person with a total value of 4 or 4.94%, and the performance of extension workers who state good is 2 people with a total value of 6 or 7.41%. To find out the extent of the performance of forestry extension workers in facilitating business partnerships between forest farmer groups, entrepreneurs, and the government, see the table 8.
Table 8 also demonstrates that, with 61 individuals and an 87.65% percentage, the Farmer Group's performance in facilitating partnerships between farmer groups, entrepreneurs, and the government in the Tompubulu sub-district is less than satisfactory. Although the effectiveness of forestry extension workers in helping forest farmer groups form very good partnerships with entrepreneurs and the government is only 12.35%, it can be concluded that the effectiveness of these workers falls into a poor category when it comes to helping forest farmer groups form poor partnerships with entrepreneurs and the government. This is due to the belief held by members of the forest farmer group that forestry extension agents are unable to help farmer groups form sustainable and coincidental partnerships with businesses and the government, particularly when it

comes to marketing non-timber forest products. Thus far, the forest farmer group's members have sold their forest products—particularly the non-timber variety—directly to traders and collectors in the area, as well as to businesses in the village that come to pick up their goods or sell them straight to the public. Workers in forestry extension are only able to help local entrepreneurs or village businesses market their forest products, but this is not done in a sustainable manner (partially).

Table 8. Results of Forestry Extension Worker Performance in Facilitating Partnerships between Forest Farmer Groups, Entrepreneurs, and the Government in Tompobulu District, Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	1	4	Very Good
2	3	2	6	Good
3	2	17	34	Moderate
4	1	37	37	Poor
	Total	**57**	**81**	

Source: Authors' Analysis of Data, 2021

Since the price at which forest products are purchased is significantly higher than the government's standard price, these traders occasionally still manipulate the price, which is generally bad for the forest farmer group. Forest extension workers have not performed their job of fostering partnerships between forest farmers and entrepreneurs—including the government—to the best of their abilities. This assertion aligns with the findings of Dadan Hardianto et al.'s research from 2021, which revealed that forest farmers maintain a genuine expectation from forestry extension workers in Pandansari Village, Pamekasan Regency, to assist them in marketing the forest products they acquire. This includes helping farmers gain access to the non-timber forest product market for pine resin. The ultimate goal is to prevent collectors, who have been purchasing the pine resin produced by the farmers, from manipulating prices and causing harm to the forest farmer group due to the collectors' self-determined low price. Furthermore, the Pandansari Village forest farmer group fervently hopes that the extension workers will help form alliances with big traders who will purchase their pine resin fairly and not injure the forest farmers in Pandansari Village. It is actually anticipated that the presence of forestry extension workers will encourage these collaborations with business owners or traders.

7) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Accessing Business Capital with Financial and Banking Institutions and the Government

The performance of forestry extension workers in facilitating farmers in accessing financial/banking institutions and the government revald is very good, none with a total value of 0 or 0%, and farmers who consider the performance of forestry extension workers to be good are 1 person with a total value of 3 or 3.95%. Futrhermore, to find out the performance of forestry extension workers in facilitating forest farmer groups in accessing financial or banking institutions and the government, we can be seen below:

Table 9. Results of Forestry Extension Worker Performance in facilitating forest farmer groups in accessing financial or banking institutions and the Government in Tompobulu District in Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	0	0	Very Good
2	3	1	3	Good
3	2	17	34	Moderate
4	1	39	39	Poor
	Total	**57**	**76**	

Source: Authors' Analysis of Data, 2021

With 56 respondents giving a total score of 73, or a percentage of 96.15%, Table 8 shows that forestry extension workers in Tompobulu Subdistrict mainly get fair and poor ratings for their performance in facilitating farmers' access to financial institutions, banks, and government agencies. On the other hand, the performance of forestry extension workers deemed to be rather good in terms of access facilitation is just 3.95%. This suggests that general performance of forestry extension agents in enabling forest farmer groups to access government agencies, banks, and financial institutions falls in the poor category. The low rating results from members of the forest farmer group believing that forestry extension workers have not been able to enable their access to financial institutions, especially banks, connected to business capital. Consequently, forest farmers still have to borrow business capital from local entrepreneurs with significant capital, such middlemen or moneylenders, for the usage of their forest products. Despite the great interest rates connected with the borrowed capital or goods, this practice consists in borrowing fertiliser, business capital for Aren and honey production, and tools for tapping pine resin.

Members of the forest farmer group rely on their income from other forest products to repay the capital loans they have taken out. Members of forest farmer groups feel that so far only forest extension workers have been able to help them access government-owned forest product facilities and infrastructure including subsidised fertiliser assistance, forest product technology assistance, and plant seed

assistance. Nonetheless, banks and the government have not been able to provide capital for forest product companies to employ forestry extension workers.
This is in line with findings of Hujani (2019) study on the Women's Forest Farmer Group in Tanah Sareal Village, Bogor Regency, still finds it highly difficult to access business capital in banks and the Government. Actually, the women's farmer group's Rattan weaving business development hopes to be able to boost production and market Rattan weaving products outside Bogor Regency by means of development of this business. Highly expected is the empowerment of forestry extension workers to be able to help women forest farmer groups in accessing business capital, both in banks and in the government, so empowering members of the women forest farmer groups and increasing the businesses they undertake.

8) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Increasing Production Results of Superior Forest Product Commodities

According to the research findings, 26 members of the forest farmer group rated the performance of forestry extension workers in Tompubulu sub-district as very good, with a total score of 104, or 61.54%. Additionally, 12 members of the forest farmer group expressed satisfaction with the performance of forestry extension workers, scoring a total of 36, or 21.31%. To view the extent to which forestry extension workers have contributed to increasing the production of superior forest commodity products in Tompobulu Sub-district, please refer to the table below.

Tabel 10. Results of Forestry Extension Worker Performance in facilitating Forest Farmer Groups to increase the production of superior forest commodities in Tompobulu District, Maros Regency

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	26	104	Very Good
2	3	12	36	Good
3	2	10	20	Moderate
4	1	9	9	Poor
	Total	**57**	**169**	

Source: Authors' Analysis of Data, 2021

Table 10 reveals that the performance of forestry extension workers in assisting forest farmer groups in increasing the production of superior forest commodity products in Tompobulu sub-district is both satisfactory and poor, with a total value of 29 individuals, or a percentage of 17.15%. The performance of forestry extension workers in assisting forest farmer groups in increasing the production of superior forest commodity products falls into the very good category, with a percentage value of 82.85%. Overall, the forestry extension workers' performance in assisting forest farmer groups to increase the production of superior forest commodity products falls into the good category. The forest farmer group asserts that the assistance of extension workers can enhance the productivity of their crops. The goods that Aren plants, pine resin, coffee, and the Trigona honey bee business sell are evident. The introduction of superior products has resulted in increased production, as a result of the innovative ideas proposed by extension workers. According to the Pelita Jaya farmer group in Rawa Mulia Village, Penajam Paser Utara Regency, farmers have successfully doubled the production of high-quality crops such as melon, mango, and soursop (Hamdani, 2017).
The rise in agricultural output is inseparable with the function of agricultural extension workers in enabling farmers in Pelita Jaya village to produce better superior commodity products. Using technology to raise the output of these crops has been much aided and facilitated by agricultural extension workers. This facilitation is achieved by means of production facilities from the Penajam Paser Utara district government to the Pelita Jaya farmer group in the form of green house facilities, water pump machines, and organic fertiliser assistance, so progressively increasing the production of these superior commodity crops, so affecting the income of the Pelita Jaya farmer group in Rawa Mulia Village.

9) Performance of Forestry Extension Workers in Facilitating Increased Income and Welfare of Forest Farmer Groups

The study's findings demonstrated that while forestry extension workers have a positive impact on members of the forest farmer group's income and well-being, the forest farmer group itself does not truly reap these benefits. As can be seen from the study's results, which show that 1 farmer, with a total value of 4 or 4.87%, reports that forestry extension workers have performed very well in increasing the income of forest farmer group members, and 2 farmers, with a total value of 6 or 7.31%, report that forestry extension workers have performed well. See the table below for further information.
Table 10 reveals that the performance of forestry extension workers in facilitating increased income and welfare of forest farmer group members, who stated that it was moderate or poor, was reported by 54 people, with a total value of 72, or 87.82%. Meanwhile, 12.18% of farmers rated the performance of forestry extension workers as very good or good. Therefore, we can conclude that the performance of forestry extension workers in aiding forest farmer group members to enhance their income and well-being falls into the "Poor" category. Farmers claim that this is due to the general inability of forestry extension workers to enhance the income and welfare of members of forest farmer groups. They assume that income has indeed increased, but the amount is not too large because of the large number of expenses for the production process, such as fertilisers that are still expensive,

expensive labour costs, the cost of paying debts from middlemen, and the cost of purchasing mixed materials for processing palm sugar and pine resin.

Table 11. Shows the outcomes of the performance of forestry extension workers in Tompobulu District, Maros Regency, in facilitating increased income and welfare for members of forest farmer groups.

No	Score (A)	Farmer Size (B)	Total (A x B)	Categories
1	4	1	4	Very Good
2	3	2	6	Good
3	2	18	36	Moderate
4	1	36	36	Poor
	Total	**57**	**82**	

Source: Authors' Analysis of Data, 2021

Additionally, the income only covers their daily needs, leaving them struggling to meet their health, education, and other needs. As a result, members of the forest farmer group continue to believe that the income from the forest products they produce has not significantly improved their income and overall welfare. Feri Markop Runtu Pandoyo (2020) stated that farmers in Keduyan Village, Pontianak Regency, do not yet receive a significant income from their rice crops due to the high production costs they incur. These costs, which include fertiliser costs, pesticide costs, and the rental of production equipment, limit their income. As a result, they resort to other businesses, such as goat and chicken farming, to supplement their income. By pursuing additional businesses, farmers can boost their income and enhance their welfare in Keduyan Village. Farmers report that the role of extension workers has not significantly boosted their income and welfare, necessitating further efforts to generate additional income for them. Consequently, they turn to other ventures to augment their earnings, like raising goats and chickens. Farmers in Keduyan Village can increase their welfare and income by pursuing other businesses. Farmers report that their income and welfare have not increased significantly as a result of the role of extension workers, requiring further efforts to generate additional income for them. Therefore, we need to innovate in extension learning and enhance the performance of extension workers if we are to increase the production of cultivated agricultural products and forest products, improve the efficiency of the costs associated with producing forest products, and raise farmers' incomes in the future.

10) Recapitulation of Forestry Extension Worker Performance in Tompobulu District.

In accordance with the results of the performance indicators of forestry extension workers in Tompobulu District that have been described above, a recapitulation of the performance of forestry extension workers in Tompobulu District can be made which can be seen in the table 12:

Table 12. Recapitulation of the Performance of Forestry Extension Workers in Tompobulu District

No	Descriptions	Volume	Categories
1	Forest Product Utilization Map Compilation	205	High
2	Forest Farmer Group Annual Work Program and Plan Compilation	211	Moderate
3	Increasing the Quality of Forest Farmer Human Resources	167	Moderate
4	Dissemination of Information on the Distribution of Forest Product Technology	160	Moderate
5	Growing Empowerment and Independence of Forest Farmers	149	Moderate
6	Business Partnerships between Farmers, Entrepreneurs and the Government	81	Low
7	Farmers' Access to Financial/Banking Institutions and the Government	76	Low
8	Increasing the Production Results of Superior Commodities	169	Moderate
9	Increasing Income and Welfare of Forest Farmers	82	Low

Source: Authors' Analysis of Data, 2021

Six performance indicators of forestry extension workers have been identified based on the findings of the conducted observations that help to enhance the knowledge and skills of members of forest farmer groups. Although three performance measures of forestry extension workers have no bearing on the knowledge and skills of forest farmer groups in Tompubulu District, Table below shows the degree of the impact of the performance of forestry extension workers in Tompubulu District on enhancing the knowledge and skills of forest farmer groups:

Tabel 13. Statistical Results of the Influence of Forestry Extension Worker Performance in Increasing the Knowledge and Skills of Forest Farmer Groups in Tompobulu District

Model	t Count	T Table	Siq
Constanta	106,761		0,006
Indicator 1	199,765		0,003
Indicator 2	266,287		0.002
Indicator 3	75.343		0.009
Indicator 4	78,459	6,313	0.008
Indicator 5	65,592		0.010
Indicator 6	0,112		0.928
Indicator 7	0,108		0.932
Indicator 8	104.387		0.006
Indicator 9	0,123		0.922

Source: Authors' Analysis of Data, 2021

With a t value of 6.613, the computed t value > t table for indicators that have an impact and are significant in improving the knowledge and skills of forest farmer groups with the highest to lowest calculated t values respectively as follows: 266.287 (indicator 2), 199.65 (indicator 1), 104.387 (indicator 8), 78.459 (indicator 4), 75.343 (indicator 3), and 65.592 (indicator 5). Table 12 With a t table value of 6.313, the computed t value for the highest to the lowest is 0.123 (indicator 9), for the second from the highest to the lowest is 0.112 (indicator 6), and for the third from the highest to the lowest is 0.108 (indicator 7). Please see further specifics in the table below.

The Influence of Forestry Extension Workers' Performance has an effect on improving the knowledge and skills of forest farmer group members, especially on the 6 indicators of extension performance because almost all forest farmer groups assume that forestry extension workers have provided benefits in Facilitating Forest Farmer Group members to prepare Annual Programs and Work Plans for Forest Farmer Groups, Facilitating Forest Farmer Groups to Prepare Forest Product Utilization Maps and Facilitating Forest Farmer Groups in Increasing Production Results of Superior Forest Product Commodities .Furthermore successful in helping Forest Farmer Groups to disseminate or spread knowledge on Forest Product Technology, Facilitating Forest Farmer Group Members in Improving Human Resource Quality, and Facilitating Forest Farmer Groups in Increasing Empowerment and Independence in Managing and Using the Surrounding Forests are Forestry Extension Workers.

Tabel 14. Tompobulu Recapitulation of Influence and Non-Influence of Forestry Extension Worker Performance on Group Knowledge and Skills

No	Descriptions	Influence	No Influence
1	Forest Product Utilization Map Compilation	205	High
2	Forest Farmer Group Annual Work Program and Plan Compilation	211	Moderate
3	Increasing the Quality of Forest Farmer Human Resources	167	Moderate
4	Dissemination of Information on the Distribution of Forest Product Technology	160	Moderate
5	Growing Empowerment and Independence of Forest Farmers	149	Moderate
6	Business Partnerships between Farmers, Entrepreneurs and the Government	81	Low
7	Farmers' Access to Financial/Banking Institutions and the Government	76	Low
8	Increasing the Production Results of Superior Commodities	169	Moderate
9	Increasing Income and Welfare of Forest Farmers	82	Low

Source: Authors' Analysis of Data, 2021

Meanwhile, forestry extension workers have not significantly aided forest farmer groups in achieving increased income and welfare, fostering business partnerships among these groups, or facilitating their access to business capital. This is in accordance with the research results of Liana, Ramadana, et al. (2021), who state that the role of forestry extension workers in Sijunjung Village, Sijunjung District, has contributed to increasing the understanding and income of forest farmers. This role can take the form of assisting members of the forester group in preparing the KTH annual work program and plan, as well as aiding KTH in enhancing the production results of superior forest product commodities. Additionally, forestry extension workers have been successful in assisting members of forest farmer groups in enhancing the quality of their human resources and fostering their empowerment and independence in forest management. Meanwhile, the role of extension workers is still lacking in empowering forest farmer groups. Facilitating Business Partnerships Between Forest Farmer Groups, Entrepreneurs, and the Government and Facilitating Forest Farmer Groups in Accessing Business Capital with Financial and Banking Institutions and the Government.

4. Conclusion

The performance of forestry extension workers that influences improving the knowledge and skills of forest farmer group members is 1) Performance of Forestry Extension Workers in Facilitating Forest Farmer Group members in compiling Annual Programs and Work Plans for Forest Farmer Groups, 2) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Compiling Forest Product Utilization Maps, 3) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Increasing Production Results of Superior Forest Product Commodities, 4) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Disseminating or Disseminating Information on Forest Product Technology, 5) Performance of Forestry Extension Workers in Facilitating Forest Farmer Group Members in Improving Human Resource Quality, and 6) Performance of Forestry Extension Workers in Facilitating Forest Farmer Groups in Developing Empowerment and Independence in managing and utilizing the surrounding forests with a calculated t value > t table. Meanwhile, the performance of forestry extension workers that does not have a significant effect on increasing the knowledge and skills of Forest Farmer Groups is: 1) the performance of Forestry Extension Workers in facilitating increased income and welfare of members of Forest Farmer Groups; 2) the performance of Forestry Extension Workers in facilitating business partnerships between Forest Farmer Groups, entrepreneurs, and the government; and 3) the performance of Forestry Extension Workers in facilitating Forest Farmer Groups in accessing business capital with financial institutions, banks, and the government, with a calculated t value <t Table.

5. Author Contributions

The first author's contribution was as compiling and analyzing the article data according to the research results, while the second author's contribution was assisting the first author in analyzing data and research results, the third author's contribution was helping to obtain data in the field, both primary and secondary

6. Completing Interests

What is proposed in the Wasian journal, Muhammadiyah University of Makassar, in terms of ideas, concepts, titles, locations and content of activities, is original and has never been involved in conflicts of interest resulting from other articles. If in the future there is any discrepancy with this statement, I am willing to be prosecuted and processed in accordance with applicable regulations.

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