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Analysis of Extension Workers Satisfaction Levels on the Performance Extension Institutions: Study Case on Barru Regency, South Sulawesi Province, Indonesia

Agustina Abdullah[1,*], Muhammad Hatta Jamil[2], Jamila Mustabi[1], Aslina Asnawi[1]

[1]Faculty of Animal Science, University of Hasanuddin, Indonesia
[2]Faculty of Agriculture, University of Hasanuddin, Indonesia

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Abstract The study's aim is to analyze the satisfaction of extension workers with extension institutions for agricultural empowerment, specifically on the aspects of organizing extension development, increasing the resources of extension institutions and managing extension institutions. The research was conducted in Barru Regency, South Sulawesi Province, Indonesia, the largest beef cattle population in Indonesia; as a consequence, extension workers provided more service to the farmers. Data was collected from 44 extension workers by questionnaire, focus group discussion, and supporting data from several key informants through in-depth interviews. Importance–Performance Analysis (IPA) and Customer Satisfaction Index (CSI) are the analytical methods used. The IPA analysis showed that providing guidance following the needs of farmers, conducting coaching in the learning process, establishing partnerships, providing infrastructure, and facilitating the capacity building of extension workers are vital attributes and priorities to be improved. In addition, the results of the analysis of CSI satisfaction levels were 83.48%, in the range of 0.81–1.00. This value indicates the extension worker's satisfaction index in a very satisfied category. Extension workers in Barru Regency, South Sulawesi, Indonesia are very satisfied with the support from extension institutions. However, there is room for improvement, particularly in providing guidance tailored to farmers' needs, offering coaching, establishing partnerships, providing infrastructure, and facilitating capacity building for extension workers. These improvements are crucial to enhance the satisfaction of extension workers, which can subsequently boost farming productivity, income, and farmer empowerment.

Keywords Agricultural Extension Centre, Attributes, Instructor's Satisfaction, Farmer Empowerment, the Performance Extension Institutions, Managing Institutions

1. Introduction

Agriculture plays an important role in providing food. Food is a strategic commodity and has always been the main need of society. The availability of food must always be guaranteed to be adequate. The agricultural sector plays an important role in providing national food and makes a major contribution to strengthening food security, which is directed at business independence, absorbing labor, sources of income, industrial raw materials or biofuel, and foreign exchange, encouraging growth, economy, and maintaining sustainability (environment, culture, and tourism) [1]. The agricultural sector (agriculture, fisheries, and animal

husbandry) rules the economic system in rural areas. The agriculture sector could be a recovery strategy and a foundation for the development of the real sector. Human resources have an important role. The availability of competent human resources will determine the success of agricultural development programs in Indonesia [2]. In this case, the position of extension workers is very strategic, especially in changing the behavior of main parties in the agricultural sector.

The extension serves as a platform facilitating consultation, training, and various activities aimed at altering farmers' behavior, enhancing their knowledge, and refining their skills in managing agricultural enterprises [3]. This guarantees the involvement of rural communities and all stakeholders in the agricultural innovation information system [4]. Consequently, the execution of extension services plays a pivotal role for farmers. To ensure farmers' satisfaction with the performance of extension workers and their ability to address new challenges in the field, it is crucial for extension workers to adapt their services to the specific circumstances and demands of farmers [5].

Assessing the success of agricultural extension workers can be determined by the degree of satisfaction farmers experience with the services provided [6]. The levels of farmer satisfaction are also shaped by their perceptions and expectations of extension components. Hence, the mere presence of an extension agent in a village doesn't guarantee uniform outcomes; instead, it hinges on the agent's capability to meet farmers' satisfaction through effective performance. It is crucial to acknowledge that the extension's objectives can only be accomplished if the desired changes align with farmers' interests and contribute to their satisfaction [7].

A new paradigm of more participatory and pluralistic has influenced the role of extension workers. According to [8] extension, workers have four important roles: empowerment, community organizing, resource development, and problem-solving. Extension workers help farmers and rural communities grow and develop through a decision-making process. Extension workers also need to understand the principles of community organizing, group management skills, the social structure of the society they face, bylaws, and rules. So, extension workers assist farmers in planning, implementing, and monitoring programs. Extension workers must also have conflict resolution and negotiation skills and be able to communicate effectively. In terms of empowerment development and problem-solving, extension workers provide a new perspective on the skills needed by farmers, such as technical management skills. In reality, the role of extension workers was shifted from providing technical solutions at the beginning to empowering organizations to solve their problems. Kowsari et al. [9] stated that optimizing extension workers' functions can be done through a modern system. Several efforts are made in institutional structure development that can encourage cooperation and coordination, such as building formal relationships between educational and research institutions or consulting with private institutions.

The Agricultural Extension Center (BPP) is a formal institution for extension workers in Indonesia. Their workplace is located at the subdistrict to district levels. The institutions have a lot of functions, such as formulating sub-district-level extension programs that align with district/city extension programs, implementing programs, and providing and disseminating information technology, production facilities, and financing. In addition, the institution facilitates institutional development and partnership with the main parties. Its institutions also carry out learning processes through pilot projects and develop agricultural business models. Therefore, extension institutions have an enormous role in extension activities. BPP, through their extension workers, not only plays a role in technology transfer, education, and farmer empowerment but also is required to participate in planning programs and activities that will synergize with the needs of farmers [10]. Furthermore, Jamil et al. [11] explain several factors that affect the performance of BPP as an extension institution in carrying out their duties, namely, BPP development, BPP quality excellence, human resources, facilities, financing, and strategic plans. In the end, extension institutions are a very influential determining factor in improving the quality of agriculture human resources and achieving agricultural development goals [10].

The lack of effectiveness of extension institutions will affect the optimization of socialization achievements and program distribution to the community [12]. Some factors affect the performance of agricultural extension workers. Internal factors considered to affect the performance of extension workers are the competence of human resources. The external factors are the characteristics of the social system (aspects that support/hinder changes in the social system because of the intervention process of agricultural development).

BPPs have a strategic role in agricultural development in Indonesia because they have the duty and function to organize non-formal education for farmers and assist farmers, teach knowledge and skills about farming, educate farmers to be able to empower all farmers' potential, and spread new innovations to farmers on how to farm well. This effort was initiated in 1962 through the mass guidance program (Bimas). Agricultural extension is conducted through a centralized approach and strict coordination between related agencies from the center to the regions. With the enactment of Law No. 32 of 2004 on Regional Government and the enactment of regional autonomy, the paradigm of agricultural development has shifted from a centralized approach to decentralization. Offices or agencies carry out the function of agricultural extension in some provinces within the scope of agriculture [13].

Extension institutions' role in encouraging and developing the participation and empowerment of main actors and business actors is built on a democratic,

transparent, and equitable basis in accordance with the mandate of Law No. 16 of 2006. Still, in reality, in the field, not all regions have the same meaning and understanding of the position and function of BPP. Many districts have not established extension institutions as mandated by the law. Each region has a different view of extension institutions. Distortions in the meaning and understanding of the position and function of BPP that are different have led to various forms of position and structure of extension institutions in the regions so that the implementation of extension is still experiencing many roles and functions that are not optimal so that it is less effective and efficient in achieving the objectives mandated by the Act [14].

Likewise, at the implementation level, almost all lines connecting each system component are still not functional due to various reasons, such as the weak performance of extension workers. There is a decrease in the performance of extension workers due to constraints with low budgeting and autonomous funds, so the programs to be implemented for farmers are not in accordance with their needs, thus causing farmers and farmer groups as a forum for development at the community level to not be able to demonstrate their performance as a strong group and independent main actors so as to put extension institutions in a weak position [15].

To see BPP's effectiveness program, namely implementing an extension program and encouraging extension workers to develop participation and empowerment for farmers, it is necessary to have an assessment carried out continuously. Therefore, this study aims to determine the level of satisfaction of extension workers with their institutions by looking at the performance of the Agricultural Extension Center in terms of service aspects (organizing extension development, increasing the resources of extension institutions, and managing extension institutions). The results of this study will empower and increase the productivity and income of the farmers. Good institutional performance will also affect the quality of life of farmers [16].

2. Materials and Methods

2.1. Respondents and Data Collection

The study was conducted in Barru District, South Sulawesi Province. Barru Regency is one of seven Bali Cattle Development Areas in Indonesia [17]. The determination of extension workers as respondents was calculated randomly based on Slovin. 44 out of 78 extension workers were selected as respondents. Data collection was conducted using questionnaires, FGD (exploring information related to the performance of extension institutions), and supporting data through in-depth interviews with several key informants. Components of the questionnaire include Institutional characteristic of extension, extension institution, extension capacity for farmers' empowerment, implementation of programs and dissemination of counseling information, and human resource capacity development.

2.2. Data Analysis

Data measurement was carried out using satisfaction measurement tools, namely, Importance–Performance Analysis (IPA) and Customer Satisfaction Index (CSI) (Table 1). Wu et al [18] state that the IPA method is an applied technique to measure the importance and performance level of the attributes. This study used IPA to determine the extension satisfaction level of extension workers with their extension institution based on the importance level and performance level assessment.

Table 1. Satisfaction level criteria

CSI Measurement	Satisfaction level
0.00–0.34	dissatisfied
0.35–0.50	less satisfied
0.51–0.65	quite satisfied
0.66–0.80	satisfied
0.81–1.00	very satisfied

Source: Ridwan and Kasim (2021)

Then, the results of the level of conformity between the importance level and performance level of the quality attributes of the extension agency (Tki) produced. The scale used for IPA is likert scale. The importance level is the Yi and the performance level is the Xi. The formula used is as follows:

$$\bar{X}_1 = \frac{\sum Xi}{n} \qquad \bar{Y}_1 = \frac{\sum Yi}{n}$$

Where:

Tki : suitability level of extension institutions

Xi : Instructor assessment scores on the performance level of extension institutional attributes

Yi : Instructor assessment scores on the importance level of extension institutional attributes

The suitability level is used to determine the extent of the extension's satisfaction as follows:

Tki> 100% : The instructor is very satisfied with the performance

Tki = 100% : The extension agent is quite satisfied with the service performance

Tki< 100% : The performance of the extension institution is deemed unable to fulfill the extension's satisfaction

After obtaining the value of the level of conformity, the average value of each service quality attribute is mapped into a Cartesian diagram. Each quadrant describes a different situation.

Quadrant I (Top Priority): Quadrants contain attributes with high importance but have a low level of performance. The performance of attributes in this quadrant should be improved and become the top priority.

Quadrant II (Maintain Achievement): Quadrants contain very important attributes and have been implemented as expected. Attributes in this quadrant must be maintained and managed properly because these attributes are able to create superior products or services.

Quadrant III (Low Priority): Quadrants contain attributes with low importance and performance. Attributes in this quadrant are considered insignificant and their implementation is lacking

Quadrant IV (Excessive): Quadrants contain attributes considered less important but already well implemented. Attributes in this quadrant can be reductors to save resources.

The CSI measurement method consists of several stages as below then viewed based on the criteria of Stramford (Irma, Ridwan, and Kasim 2021).

1. weighting factors, which involves changing the average value of the importance level to a percentage of the total average value of the importance level for all tested attributes so that a total weighting factor of 100% is obtained;
2. weighted score, which involves the multiplication value between the average value of the performance level or satisfaction of each attribute with the weighting factors for each attribute;
3. weighted total, which involves adding the weighted score of all attributes; and
4. the satisfaction index, which involves the calculation of the total weighted divided by the maximum or used scale and then multiplied by 100%.

3. Results and Discussion

3.1. Identify the Level of Performance of the Extension of Institutional Attributes

Identification of the attributes of the extension institution includes attributes based on the importance level and performance level according to the extension's perception. Performance extension institutions were assessed using the Importance–Performance Analysis (IPA) method, which shows the priority of improving the performance level of each attribute with a Cartesian diagram that is divided into four quadrants. With the position of each attribute in the quadrant, it is obtained from the average value of the importance level and the average value of the attribute performance level in the measurement of extension institutions. Table 2 summarizes the results of a descriptive analysis of the importance level of each attribute of agricultural extension institutions.

Based on the results of the calculation of the IPA analysis, TKi was obtained with an average value of the level of conformity of extension institutions of 95.79, while the average value of the importance level is 4.35, and the average value of the performance level is 4.16. These two values will be the centerline on the Cartesian IPA diagram (Figure 1), where the importance level is the Y-axis and the performance level is the X-axis. An explanation of each point is presented in Table 3.

The cartesian diagram (Figure 1) shows a mapping based on the importance level and performance level, allowing extension institutions to improve the attributes deemed important by extension agents, both in the short and long term. With the improvement of attributes, it will be easier for extension institutions to prioritize improvements for each attribute.

Table 2. Results of the calculation of the average importance level performance-level in extension institutions

Service aspects (attributes)		Extension institutional development		
		$\bar{x}$ (x)	$\bar{y}$ (y)	Tki
Organizing Extension Development				
1	Perform extension program formulation	4.55	4.75	95.8
2	Facilitate the preparation of RDK and RDKK	4.59	4.66	98.5
3	Provide and disseminate information, technology and facilities, and infrastructure	4.16	4.41	94.3
4	Facilitate capacity building of extension workers	4.14	4.41	93.9
Enhancement of Extension Institution Resources				
5	Availability of information sources at the BPP	3.91	4.32	90.5
6	Carrying out coaching according to the needs of farmers	4.39	4.41	99.6
7	Suitability of the BPP meeting material with the problems faced by the extension agents	4.25	4.30	98.8
8	BPP's ability to solve extension and farmer problems	4.36	4.27	102
Management of Extension Institutions				
1.	Carry out counseling			
9	Carry out outreach by distributing materials and methods as needed	4.39	4.32	102
10	Carry out coaching, partnerships, infrastructure, and financing of extension workers	4.07	4.18	97.4
11	Availability of extension materials	4.25	4.25	100
12	Active in conducting the frequency of meetings held at BPP	4.43	4.48	98.9
2.	Carry out coaching			
13	Provide guidance according to the needs of breeders	4.11	4.50	91.3
14	Develop discipline and a sense of responsibility in enhancing the work ethic of instructors	4.18	4.45	94
15	Resolve the problems faced by farmer extension workers and farmers to reach a useful agreement	4.20	4.45	94.4
16	Carry out coaching in the learning process, partnerships, institutional management, infrastructure, and funding for an extension worker	4.02	4.32	93.1
3.	Develop and facilitate			
17	Facilitate the application of farming technology (materials, tools, methods) by members according to the activity plan	3.98	4.25	93.7
18	Facilitate proper and correct administrative management	4.09	4.16	98.3
19	Establish cooperation/business partnerships with providers of production facilities for processing and marketing of products and/or capital	3.86	4.16	92.8
20	Facilitate programming costs and operational costs	3.36	3.86	87.1
	Average	4.16	4.35	95.8

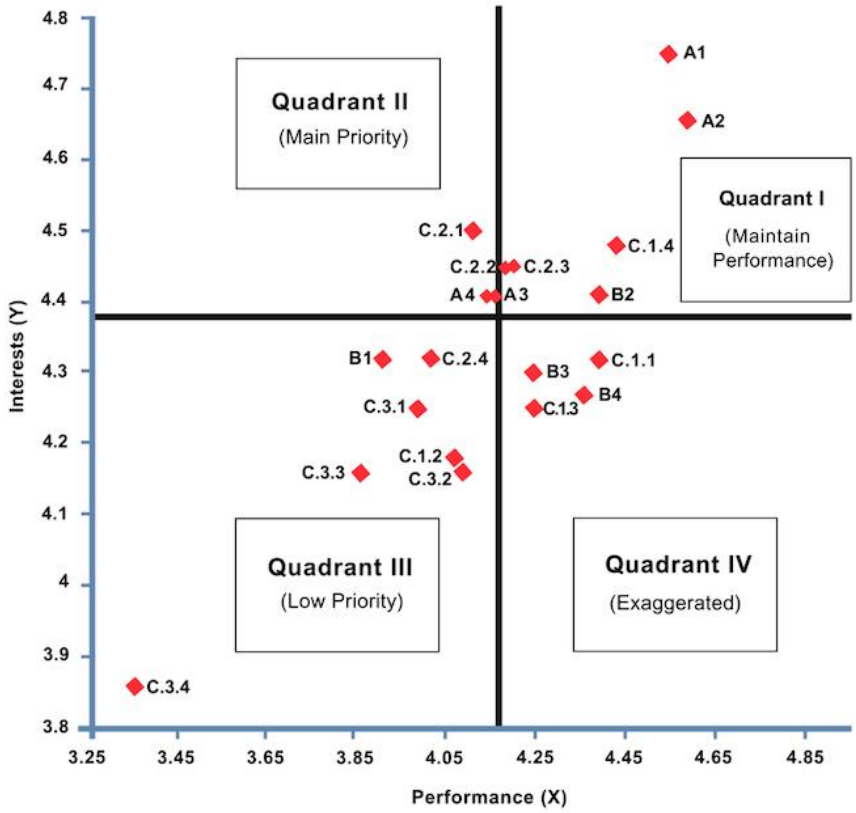

Figure 1. Coordinate cartesian of IPA diagram

Table 3. Explanation of labels in Figure 1

Label	Note
A1	Perform extension program formulation
A2	Facilitate the preparation of RDK and RDKK
A3	Provide and disseminate information, technology, and infrastructure
A4	Facilitate capacity building of extension workers
B1	Availability of technology information sources at BPP
B2	Carry out guidance according to the needs of farmers
B3	Suitability of the material for the BPP meeting with the problems faced by the instructor
B4	The ability of BPP to solve extension and farmer problems
C.1.1	Carry out outreach with the dissemination of materials and methods
C.1.2	Carry out coaching, partnerships, infrastructure, and financing extension workers
C.1.3	Availability of extension materials
C.1.4	Active in conducting the frequency of meetings held at BPP
C.2.1	Provide guidance according to the needs of breeders
C.2.2	Develop discipline and a sense of responsibility in increasing the work ethic of the instructor
C.2.3	Resolve problems faced by extension workers and breeders to reach a useful agreement
C.2.4	Carry out guidance in the learning process, partnerships, institutional management, facilities, and infrastructure for extension workers
C.3.1	Facilitate the application of farming technology
C.3.2	Facilitate administrative management
C.3.3	Establish a business partnership cooperation with the provider of marketing processing production facilities
C.3.4	Facilitate the programming cost and operational costs

The results of the IPA calculation explained several attributes, namely:

- The attributes in quadrant I are providing guidance according to the needs of breeders, carrying out coaching in the learning process, partnerships, managing institutions, facilities, and infrastructure for extension workers, and facilitating capacity building of extension workers [19]. Attributes located in this quadrant were the main priority to be improved by extension agencies to obtain satisfaction and balanced interests in accordance with the expectations of extension agents.
- The attributes in quadrant II describe the attributes of the extension's institutional capacity as attributes that are considered very important by the extension agents and have been implemented by the extension institutions properly according to the extension's expectations. Extension institutions must maintain the performance of this attribute because this attribute is an institutional strength that improves the performance of extension agents. The attributes included in quadrant II are as follows: formulating extension programs; facilitating the preparation of RDK and RDKK; providing and disseminating information, technology, facilities and infrastructure; carrying out coaching according to the needs of breeders; being active in conducting meetings of the BPP; developing discipline and a sense of responsibility in improving the work ethic of extension workers, and solving problems faced by extension workers and farmer farmers to reach a useful agreement. Alam and Velayati [19] explained that the attributes located in this quadrant are considered as supporting factors for instructor satisfaction. This means that the extension agency can maintain its performance on matters that are considered important to the extension agency's services. So, extension institutions are obliged and must be able to maintain the achievements they have achieved.
- The attributes in quadrant III describe the attributes of the aspect of extension institutions as less important attributes, and their performance is still low. The attributes included in quadrant III are as follows: availability of technological information sources at BPP; carrying out coaching, partnerships, infrastructure, and financing of extension workers; facilitating the application of farming technology; facilitating administrative management; establishing joint venture partnerships with production facility providers; and facilitating programming costs and operational costs. Alam and Velayati [19] mentioned that in this quadrant, extension workers do not consider it important and do not feel satisfied with the service attributes provided by field extension institutions, so extension agents do not need to prioritize or pay too much attention to these attributes; they just need to maintain and adapt to current conditions.
- The attributes in quadrant IV describe the attributes of the extension institution aspect as less important attributes but the actual performance is high. The attributes that are included in quadrant IV are as follows: the suitability of the BPP meeting material with the problems faced by the extension agents, the ability of the BPP to solve extension and farmer problems, carry out counseling by distributing materials and methods, the availability of extension materials [19]. The extension workers feel that the existing attributes are considered satisfactory but are not too important for the extension workers, so the extension agency does not need to allocate too many resources related to these attributes; it is enough to maintain them.

3.2. CSI Extension Agents with an Extension of Institutions

The results of the CSI analysis show the extent to which extension agents' satisfaction level with extension institutions. Based on the results of the CSI analysis (Table 4), it can be seen that the CSI value is 83.5%. If this value is based on the consumer satisfaction index, then the CSI value is in the range of 0.81–1.00. Therefore, it can be said that the instructor's satisfaction index for the tested attributes is generally very satisfactory. Extension satisfaction lies in the ability of extension institutions to understand the needs, desires, and expectations of extension workers so that the delivery of the extension process is in accordance with the expectations and satisfaction of extension workers and the community [20].

From this analysis, to increase the value of the instructor's satisfaction with the performance of extension institutions, the attributes that must be prioritized are their performance in quadrant I.

From this analysis, to increase the value of the instructor's satisfaction with the performance of extension institutions, the attributes that must be prioritized are their performance in quadrant I.

Attributes that are considered very important and priority attributes to be improved but whose current performance is not satisfactory, so extension workers need to allocate adequate resources to improve their performance, are as follows: providing coaching according to the needs of farmers, conducting coaching in the learning process, establishing partnerships, providing infrastructure, and facilitating the capacity building of extension workers. This shows that attributes above average are considered important in assessing extension workers and become determinants of their satisfaction. This finding is in line with a previous study by Setiawan et al [21] that found that extension workers prefer good facilities and infrastructure, and where service is the overall characteristic of the ability to satisfy stated or implied needs, the existence of good

service quality will make extension workers feel satisfied and trust them.

The discrepancy between the expectations of extension workers and the performance of extension institutions can affect the level of satisfaction of extension workers. This study only analyzed the level of interest and performance of extension institutions. The suitability level of extension agents is a percentage obtained from a comparison of total performance and total interest in the performance attributes of extension institutions. Performance value is the value of implementing services provided by extension institutions. The value of importance is a value that shows the extension worker's expectations of the performance or service that has been provided. This analysis shows the priority of attributes that affect extension worker satisfaction. Attribute suitability determines the priority of the attributes that affect satisfaction [20].

Table 4. Outreach institutional CSI results

No.	Attribute	MIS	WF	LPA	*WS*
1	Perform extension program formulation	4.75	5.47	4.55	0.25
2	Facilitate the preparation of RDK and RDKK	4.66	5.36	4.59	0.25
3	Provide and disseminate information, technology, facilities, and infrastructure	4.41	5.07	4.16	0.21
4	Facilitate capacity building of extension workers	4.41	5.07	4.14	0.21
5	Availability of information sources at the BPP	4.32	4.97	3.91	0.19
6	Carry out coaching according to the needs of farmers	4.41	5.07	4.39	0.22
7	Suitability of the BPP meeting material with the problems faced by the extension agents	4.30	4.95	4.25	0.21
8	BPP's ability to solve extension and farmer problems	4.27	4.91	4.36	0.21
9	Carry out outreach by distributing materials and methods as needed	4.32	4.97	4.39	0.22
10	Carry out coaching, partnerships, infrastructure, and financing of extension workers	4.18	4.81	4.07	0.20
11	Availability of extension materials	4.25	4.89	4.25	0.21
12	Active in conducting the frequency of meetings held at BPP	4.48	5.15	4.43	0.23
13	Provide guidance according to the needs of breeders	4.50	5.18	4.11	0.21
14	Develop discipline and a sense of responsibility in enhancing the work ethic of instructors	4.45	5.12	4.18	0.21
15	Resolve problems faced by farmer extension workers and farmers to reach a useful agreement	4.45	5.12	4.20	0.22
16	Carry out coaching in the learning process, partnerships, institutional management, infrastructure, and funding for extension workers	4.32	4.97	4.02	0.20
17	Facilitate the application of farming technology (materials, tools, methods) by members according to the activity plan	4.25	4.89	3.98	0.19
18	Facilitate proper and correct administrative management	4.16	4.79	4.09	0.20
19	Establish business cooperation/partnerships with providers of production facilities for processing and marketing of products and/or capital	4.16	4.79	3.86	0.18
20	Facilitate programming costs and operational cost	3.86	4.44	3.36	0.15
Total		86.9	100	83.3	4.17
Average		4.35	5.00	4.16	0.21
CSI					83.5

4. Conclusions

This study highlights a high level of satisfaction among extension workers in agricultural empowerment institutions in Barru Regency. However, the research findings emphasize the need for targeted improvements in key areas, including tailored guidance for farmers, strengthened coaching and mentoring programs, fostered partnerships with relevant stakeholders, enhanced infrastructure support, and ongoing capacity building for extension workers. By addressing these areas, institutions can further boost worker satisfaction, increasing productivity, income, and empowerment for farmers in the region.

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