

**EVALUATION OF LOWLAND RICE FARMERS' SATISFACTION LEVEL WITH THE
PERFORMANCE OF AGRICULTURAL EXTENSION WORKERS IN NOELBAKI VILLAGE,
KUPANG TENGAH DISTRICT, KUPANG REGENCY
(Evaluasi Tingkat Kepuasan Petani Padi Sawah terhadap Kinerja Penyuluh Pertanian di Desa Noelbaki,
Kecamatan Kupang Tengah, Kabupaten Kupang)**

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ABSTRACT

This study aims to evaluate the performance attributes of agricultural extension workers and the satisfaction level of lowland rice farmers in Noelbaki Village, Kupang Tengah District, Kupang Regency. The study was motivated by a decline in lowland rice production over the last two years, indicating the need to evaluate the effectiveness of agricultural extension workers as farmer companions. The research used a survey method, with data collected through questionnaires and interviews with lowland rice farmers. Data were analyzed using qualitative descriptive analysis to describe extension worker performance, as well as Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI) methods to evaluate farmers' satisfaction levels. The results show that the performance of agricultural extension workers includes five service dimensions: tangibles, reliability, responsiveness, assurance, and empathy. In general, extension worker performance has been good, although several indicators still need improvement, particularly ease of contact and ability to use the local language. The IPA results show that the importance level had an average score of 3.91, categorized as important, while the performance level had an average score of 3.49, categorized as satisfied. Meanwhile, the CSI analysis resulted in an index value of 69.6%, which is in the "satisfied" category based on the CSI criterion of 68–84%. Thus, lowland rice farmers in Noelbaki Village were satisfied with the performance of agricultural extension workers, although improvements in several attributes are still needed to enhance the quality of extension services.

Keywords: agricultural extension performance, farmer satisfaction, IPA, CSI, lowland rice, Noelbaki.

ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi atribut kinerja penyuluh pertanian dan tingkat kepuasan petani padi sawah di Desa Noelbaki, Kecamatan Kupang Tengah, Kabupaten Kupang. Penelitian ini dilatarbelakangi oleh penurunan produksi padi sawah selama dua tahun terakhir, yang mengindikasikan perlunya evaluasi terhadap efektivitas penyuluh pertanian sebagai pendamping petani. Penelitian menggunakan metode survei, dengan pengumpulan data melalui kuesioner dan wawancara bersama petani padi sawah. Data dianalisis menggunakan analisis deskriptif kualitatif untuk menggambarkan kinerja penyuluh, serta metode *Importance Performance Analysis* (IPA) dan *Customer Satisfaction Index* (CSI) untuk mengevaluasi tingkat kepuasan petani. Hasil penelitian menunjukkan bahwa kinerja penyuluh pertanian mencakup lima dimensi layanan: bukti fisik (*tangibles*), keandalan (*reliability*), daya tanggap (*responsiveness*), jaminan (*assurance*), dan empati (*empathy*). Secara umum, kinerja penyuluh pertanian dinilai baik, meskipun beberapa indikator masih memerlukan perbaikan, khususnya terkait kemudahan untuk dihubungi dan kemampuan menggunakan bahasa daerah. Hasil IPA menunjukkan bahwa tingkat kepentingan memiliki skor rata-rata 3,91 (dikategorikan penting), sedangkan tingkat kinerja memiliki skor rata-rata 3,49 (dikategorikan puas). Sementara itu, analisis CSI menghasilkan nilai indeks sebesar 69,6%, yang termasuk dalam kategori "puas" berdasarkan kriteria CSI sebesar 68–84%. Dengan demikian, petani padi sawah di Desa Noelbaki merasa puas terhadap kinerja penyuluh pertanian, meskipun perbaikan pada beberapa atribut masih diperlukan untuk meningkatkan kualitas layanan penyuluhan.

Kata kunci: keragaan penyuluh pertanian, kepuasan petani, IPA, CSI, padi sawah, Noelbaki

INTRODUCTION

Indonesia is known as an agrarian country where most of the population depends on the agricultural sector for their livelihood. This sector has an important role in national economic development, food provision, and improving the welfare of rural communities. One of the main food commodities that plays a strategic role in food security is lowland rice. The success of lowland rice farming is strongly influenced by farmers' ability to manage production factors, one of which is supported by the role of agricultural extension workers.

Agricultural extension is a strategic activity that plays an important role in agricultural sector development, particularly in increasing farmers' capacity and independence. Extension functions as a bridge between farming practices in the field and the development of agricultural knowledge, technology, and innovation. The success of extension is strongly determined by the ability of extension workers to carry out communicative functions effectively, so that the information and innovations delivered can be understood and applied by farmers (Ahmad, 2022).

Agricultural extension workers act as facilitators, educators, motivators, and mediators in assisting farmers. Good extension performance is reflected in technical ability, communication skills, accuracy in information delivery, and the intensity of field assistance. Fitriani and Puspitasari (2021) showed that the quality of extension services, including reliability, responsiveness, assurance, empathy, and physical evidence, significantly influences farmers' knowledge, skills, and satisfaction. Conversely, suboptimal extension performance can hinder the adoption of innovation and farm development.

Rice production in East Nusa Tenggara Province shows diverse dynamics across regencies/cities and across time periods. Differences in geographical conditions, climate, and levels of agricultural development cause considerable variation in rice production achievements in each region (Fitriani & Bani, 2025). Noelbaki Village, located in Kupang Tengah District, Kupang Regency, is one of the areas in NTT that produces lowland rice.

Based on lowland rice production data in Noelbaki Village, production in 2022 was 1,099.4 tons and in 2023 was 707.79 tons. These data show that lowland rice production decreased (Desa Noelbaki, 2024). The problems suspected in Noelbaki Village include the limited availability of agricultural extension workers in helping solve problems faced by farmers, such as pesticide use, fertilizer use, and pest control. One relevant approach to assessing extension worker performance is through measuring farmer satisfaction.

Farmer satisfaction reflects the fit between farmers' expectations and the extension worker performance perceived in the field. Nurul Wakhidah (2022) stated that farmer satisfaction can be used as a main indicator in assessing the quality of agricultural extension services because it describes farmers' perceptions of the effectiveness of extension workers' roles. Ishan Nurilmi (2023) proved that agricultural extension worker performance has a significant effect on farmer satisfaction and farming success. However, studies on the satisfaction level of lowland rice farmers with agricultural extension worker performance in Noelbaki Village remain limited. Therefore, this study aims to identify the performance attributes of agricultural extension workers and to determine the satisfaction level of lowland rice farmers with agricultural extension worker performance in Noelbaki Village, Kupang Tengah District, Kupang Regency.

METHODS

This study was conducted in September 2025 in Noelbaki Village, Kupang Tengah District, Kupang Regency. The data analysis methods used were qualitative descriptive analysis and descriptive analysis using Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI), viewed from the dimensions of tangibles, reliability, responsiveness, assurance, and empathy.

To answer the first objective, namely identifying the service performance attributes of agricultural extension workers for lowland rice farmers in Noelbaki Village, Kupang Tengah District, Kupang Regency, qualitative descriptive analysis was used. Qualitative descriptive analysis describes a phenomenon or event using language or words without involving numerical or statistical measurement (Sugiyono, 2017).

To answer the second objective, namely determining the satisfaction level of lowland rice farmers with agricultural extension worker performance in Noelbaki Village, Kupang Tengah District, Kupang Regency, descriptive analysis using Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI) was prepared based on the dimensions of tangibles, reliability, responsiveness, assurance, and empathy.

Importance Performance Analysis (IPA)

Importance Performance Analysis (IPA) is a method used to measure the level of importance and the level of performance. To assess performance and importance, the results are presented in a Cartesian diagram, where the X-axis represents the performance level of attributes and the Y-axis represents the importance level.

$$\bar{X}_t = \frac{\sum X_i}{n} \quad \bar{Y}_t = \frac{\sum Y_i}{n}$$

In the IPA formula, X_t as the mean performance score of the i-th attribute, Y_t as the mean importance score of the i-th attribute, X_i as the total performance score of the i-th attribute, Y_i as the total importance score of the i-th attribute, and n as the total number of consumer data are used.

A Cartesian diagram is a graph divided into four regions and bounded by two perpendicular lines intersecting at points X and Y. The X and Y values are used as coordinate pairs for attribute points that indicate the position of indicators in the Cartesian diagram. According to Wijaya (2018), IPA analysis in the form of a Cartesian diagram is a procedure for determining basic indicators that show the relative importance of each indicator and identify indicators or areas for service quality improvement. The IPA method analyzes the conformity level, which is a comparison between the expected score and the service score provided. The conformity level can determine priorities for customer satisfaction that need improvement.

Each quadrant in the Cartesian diagram describes a different situation: Quadrant I (main priority) identifies indicators considered highly influential on customer satisfaction; Quadrant II (maintain performance) explains successful performance that must be maintained because it is considered very important and very satisfying; Quadrant III (low priority) shows factors considered less important by customers and whose implementation by the organization is not yet optimal; and Quadrant IV (excessive) shows indicators considered less important by customers but whose implementation is very satisfying, thus considered excessive (Anggrani and Alhemp, 2021).

This method is used to identify service factors considered to have a significant impact on farmer satisfaction and loyalty. For assessment, each attribute became a question item, where very important was scored 5, important was scored 4, moderately important was scored 3, not important was scored 2, and very unimportant was scored 1. The scale ranges for importance and performance are shown in Table 1.

Table 1. Scale Range of Importance Level and Performance Level

No.	Importance and Performance Value	Importance Criteria	Performance Criteria
1	1.00–1.79	Very unimportant	Very dissatisfied
2	1.80–2.59	Unimportant	Dissatisfied
3	2.60–3.39	Moderately important	Moderately satisfied
4	3.40–4.19	Important	Satisfied
5	4.20–5.00	Very important	Very satisfied

Source: Alam and Velayati (2020).

Customer Satisfaction Index (CSI)

The Customer Satisfaction Index (CSI) is a method that uses an index to determine the overall level of customer satisfaction by considering the importance level of product or service attributes. According to Stratford in Nuryana (2018), this index measurement is carried out in four stages: determining the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS), creating the Weight Factor (WF), creating the Weight Score (WS), and determining the CSI value.

MIS and MSS are obtained from the average satisfaction and importance scores of each respondent. WF is the percentage of each attribute's value relative to the total importance score of all attributes. WS is the multiplication of the Weight Factor (WF) and Mean Satisfaction Score (MSS). The total WS from the first to the last attribute is called the Weight Average Total (WAT). The CSI formula uses WAT divided by the maximum scale used. The reference category interval is determined using an interval value, with R as the maximum score percentage of 100%, r as the minimum score percentage of 20%, and n as the number of categories/classes, namely 5. Based on the calculation, the interval value is 16.

Table 2. Customer Satisfaction Index (CSI) Criteria

No.	CSI Value	CSI Criteria
1	20–36	Very dissatisfied
2	36–52	Dissatisfied

3	52–68	Moderately satisfied
4	68–84	Satisfied
5	84–100	Very satisfied

Source: L. R. Levis (2013).

RESULTS AND DISCUSSION

Respondent Characteristics

All research respondents were male. Most respondents were in the productive age range of 15–64 years, amounting to 78.18%. Respondents' education level was dominated by elementary and junior high school graduates. The average number of family dependents was five people, and most farming experience was categorized as highly experienced (>10 years).

Service Performance Attributes of Agricultural Extension Workers for Lowland Rice Farmers

The service performance of agricultural extension workers for lowland rice farmers in Noelbaki Village has an important influence on farming success. Farmers will feel satisfied if agricultural extension workers are able to provide good services according to their needs. Based on respondents' answers regarding agricultural extension worker service performance in Noelbaki Village, farmers strongly expected extension workers to always be present among them to provide knowledge, guidance, and solutions in developing farming activities.

Tangibles include neatness and appearance. Activities related to extension workers' neatness and appearance are easily observed by farmers and generally become an immediate basis for assessment. Neatness and appearance are important aspects in farmer assessment because they relate to the physical impression or outward appearance of agricultural extension workers.

The ability of extension workers to use the local language means that extension workers must be able to communicate effectively with local residents to provide information and knowledge that are relevant and useful for farmers. Thus, the ability to use the local language is important to ensure that the messages delivered can be properly understood by the community.

Reliability includes direct guidance in the field. Direct field guidance means directly applying strengthened materials such as sales, fertilization, maintenance technology, and ways to improve agricultural business activities. Farmer education and regular visits are important indicators in extension activities because regular visits allow direct meetings between extension workers and farmers to discuss problems arising in farming. These visits also encourage improvements in farmers' knowledge, skills, and capacity to develop agricultural activities sustainably.

Other reliability indicators include seeking facilities and infrastructure, helping group administration, providing new technical information, delivering market information, and providing information on business and capital opportunities. Farmers expect business activities to be supported through facilities such as tractors, fertilizers, medicines, and seeds. Farmer groups must prepare group management documents such as RDKK and RUK. New technical information helps farmers improve agricultural output. Market information is important because it helps farmers promote farm products, while information on business and capital opportunities can support agricultural business development.

Responsiveness includes quick response in handling emerging problems, speed in addressing farmer complaints, and speed in handling farmer reports. These indicators show the ability of extension workers to respond quickly and provide solutions when farmers encounter problems in farming or group dynamics.

Assurance includes friendliness, ability and knowledge to deliver materials, and knowledge of field problems. Extension workers must be ready to help and act kindly in order to provide effective extension services. They must also master the material delivered during extension activities so that the information is easy for farmers to understand. Knowledge of field problems helps farmers solve technical and farmer group management problems.

Empathy includes being easy to find and contact, providing equal service to farmers, and giving special attention to certain problems. Farmers feel comfortable and trust extension workers when they can meet or contact them for discussion. Equal service makes farmers more comfortable and prevents conflict within groups. Certain problems need to be handled directly and specifically by extension workers so that they can be resolved quickly.

Lowland Rice Farmers' Satisfaction Level with Agricultural Extension Worker Performance

Importance Performance Analysis (IPA) is a method used to measure importance and performance levels. Based on the theory of satisfaction evaluation toward agricultural extension worker performance, which consists of five variables according to Kotler (2002), the assessment was divided into 18 indicators.

Table 3. Calculation Results of Importance Performance Analysis: Importance Level

N o.	Importance Indicator	Importance Score	Criteria
1	Neatness and appearance of extension workers	3.64	Important
2	Ability of extension workers to use the local language	3.47	Important
3	Conducting direct guidance in the field	3.82	Important
4	Education and regular farmer visits	3.71	Important
5	Seeking facilities and infrastructure	3.62	Important
6	Helping group administration	3.85	Important
7	Providing new technical information	3.85	Important
8	Delivering market information	3.84	Important
9	Providing information on business and capital opportunities	3.69	Important
10	Quick response in dealing with emerging problems	4.05	Important
11	Speed in addressing farmer complaints	3.84	Important
12	Speed in handling farmer reports; friendliness of extension workers	4.04	Important
13	Friendliness of extension workers	4.11	Important
14	Ability and knowledge to provide materials	4.07	Important
15	Knowledge of field problems	4.27	Very important
16	Easy to find and contact	3.87	Important
17	Equal service for farmers	4.35	Very important
18	Giving special attention to certain problems	4.20	Very important
	Average	3.91	Important

Source: Processed primary data, 2025.

Table 3 shows that the overall answers to the importance-level questions from 55 respondents in Noelbaki Village produced an overall average of 3.49 with important criteria in the source narrative. This indicates that, overall, the performance carried out by agricultural extension workers in Noelbaki Village is important for farmers.

Table 4. Calculation Results of Importance Performance Analysis: Performance Level

No.	Performance Indicator	Performance Score	Criteria
1	Neatness and appearance of extension workers	3.75	Satisfied
2	Ability of extension workers to use the local language	3.98	Satisfied
3	Conducting direct guidance in the field	3.35	Moderately satisfied
4	Education and regular farmer visits	3.35	Moderately satisfied
5	Seeking facilities and infrastructure	3.45	Satisfied
6	Helping group administration	3.76	Satisfied
7	Providing new technical information	3.36	Moderately satisfied
8	Delivering market information	3.27	Moderately satisfied
9	Providing information on business and capital opportunities	3.39	Moderately satisfied
10	Quick response in dealing with emerging problems	3.62	Satisfied
11	Speed in addressing farmer complaints	3.59	Satisfied
12	Speed in handling farmer reports; friendliness of extension workers	3.49	Satisfied
13	Friendliness of extension workers	3.62	Satisfied
14	Ability and knowledge to provide materials	3.63	Satisfied
15	Knowledge of field problems	3.35	Moderately satisfied

16	Easy to find and contact	3.38	Moderately satisfied
17	Equal service for farmers	3.24	Moderately satisfied
18	Giving special attention to certain problems	3.24	Moderately satisfied
Average	Average	3.49	Satisfied

Source: Processed primary data, 2025.

Based on Table 4, of the 18 indicators, farmers were moderately satisfied with eight performance indicators: direct field guidance, education and regular farmer visits, providing new technical information, delivering market information, providing information on business and capital opportunities, knowledge of field problems, ease of being found and contacted, and giving special attention to certain problems. Overall, farmers were satisfied with agricultural extension worker performance, with an average score of 3.49.

The IPA results on agricultural extension worker indicators used to measure importance and performance levels among lowland rice farmers in Noelbaki Village can be displayed using a Cartesian diagram, where the X-axis represents performance and the Y-axis represents importance.

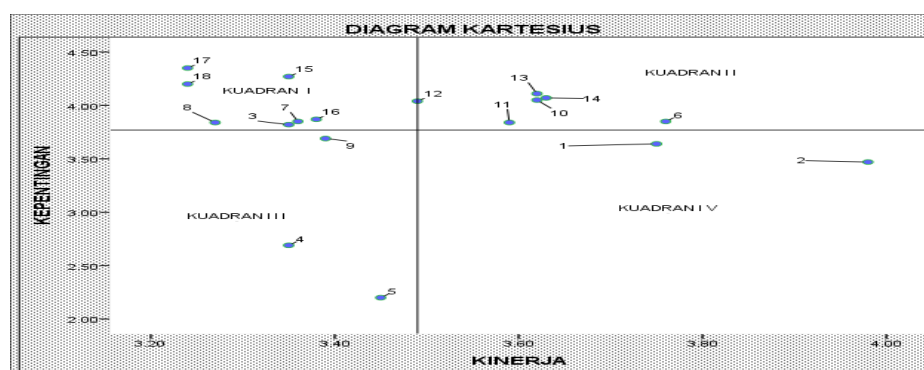


Figure 1. Attribute assessment point position of agricultural extension workers in the Cartesian diagram.

Based on the IPA analysis in the Cartesian diagram, Quadrant I contained seven indicators of extension worker importance and performance, namely direct guidance in the field, providing new technical information, neatness and appearance of extension workers, delivering market information, knowledge of field problems, ease of being found and contacted, equal service for farmers, and giving special attention to certain problems. These are the main priorities, meaning that farmer expectations are high but satisfaction is low. Quadrant II contained six indicators, namely helping group administration, quick response in handling emerging problems, speed in addressing farmer complaints, speed in handling farmer reports, friendliness of extension workers, and ability and knowledge to provide materials. These represent successful performance that must be maintained because they are considered important and satisfying. Quadrant III contained three indicators, namely education and regular farmer visits, seeking facilities and infrastructure, and providing information on business and capital opportunities. Quadrant IV contained two indicators, namely neatness and appearance of extension workers and the ability of extension workers to use the local language. Based on the number of indicators in each quadrant, Quadrant I had the most indicators and therefore is the most important area to improve. Quadrant II needs to be maintained, while Quadrants III and IV should be used as evaluation material for work-priority setting and performance efficiency so that extension services better match farmer needs.

Customer Satisfaction Index (CSI) Analysis

This method is used to determine the overall satisfaction level of farmers by considering the importance and performance levels of agricultural extension workers. The results are presented in Table 5.

Table 5. Calculation Results of CSI Analysis

No.	Indicator	MIS	MSS	WF	WS
1	Neatness and appearance of extension workers	3.63	3.75	5.36	20.07
2	Ability to use the local language	3.47	3.98	5.12	20.38
3	Direct guidance in the field	3.82	3.35	5.63	18.82
4	Education and regular farmer visits	2.69	3.35	4.28	17.66
5	Seeking facilities and infrastructure	2.20	3.45	5.15	19.79
6	Helping group administration	3.85	3.76	5.68	21.38
7	Providing new technical information	3.85	3.36	5.68	19.11
8	Delivering market information	3.44	3.27	5.65	18.50
9	Providing business and capital opportunity information	3.69	3.39	5.44	18.43
10	Quick response to emerging problems	4.05	3.62	5.98	21.62
11	Speed in addressing farmer complaints	3.84	3.59	5.65	20.31
12	Speed in handling farmer reports	4.04	3.49	5.95	20.77
13	Friendliness of extension workers	4.11	3.62	6.06	21.91
14	Ability and knowledge to provide materials	4.07	3.63	6.00	21.79
15	Knowledge of field problems	4.27	3.35	6.30	21.11
16	Easy to find and contact	3.87	3.38	5.71	19.30
17	Equal service for farmers	4.35	3.24	6.40	20.73
18	Giving special attention to certain problems	4.20	3.24	6.19	20.03
Total	Total	70.29	62.82	100	348
CSI	Customer Satisfaction Index			69.6	69.6

Source: Processed primary data, 2025. Note: MIS = Mean Importance Score; MSS = Mean Satisfaction Score; WF = Weight Factor; WS = Weight Score.

The Customer Satisfaction Index was calculated as $348/5 \times 100\% = 69.6\%$. Based on the CSI analysis in Table 5, the satisfaction level of lowland rice farmers in Noelbaki Village was 69.6%. The CSI calculation falls within the satisfied criterion, with a value category of $>68-84$. Overall, lowland rice farmers in Noelbaki Village, Kupang Tengah District, Kupang Regency, were satisfied with the performance of agricultural extension workers in Noelbaki Village. This finding is consistent with Ishan Nurilmi (2023), who stated that farmers in Talagasari Village, Kawali District, Ciamis Regency, were satisfied with agricultural extension worker performance, with a Customer Satisfaction Index (CSI) value of 71.25%.

CLOSING

Conclusion

Based on the results of the study evaluating the satisfaction level of lowland rice farmers with the performance of agricultural extension workers in Noelbaki Village, Kupang Tengah District, Kupang Regency, several conclusions can be drawn. The service performance attributes of agricultural extension workers for lowland rice farmers in Noelbaki Village include five main dimensions: tangibles (appearance and neatness), reliability (ability to deliver materials and use the local language), responsiveness (quick response in handling problems), assurance (clarity of information and technical knowledge), and empathy (easy to meet and providing attention to farmers). In general, extension worker performance was good in assisting farmers, although several indicators still need improvement so that extension services become more optimal.

The satisfaction level of lowland rice farmers with agricultural extension worker performance in Noelbaki Village is shown by the Importance Performance Analysis (IPA) results, where the importance level was 3.77

with important criteria and the performance level was 3.49 with satisfied criteria. The Customer Satisfaction Index (CSI) result in the conclusion section of the source states that the satisfaction level of lowland rice farmers in Noelbaki Village obtained a CSI value of 79.2%, categorized as satisfied in the value category of >68–84.

Recommendations

Agricultural extension workers in Noelbaki Village, Kupang Tengah District, Kupang Regency, are expected to maintain the performance attributes that have been implemented and continue improving performance attributes that have not yet been carried out properly.

The government is expected to distribute infrastructure support such as fertilizers, agricultural tools, and machinery to farmers in Noelbaki Village so that agricultural extension worker performance can be carried out properly.

The five farmer groups in Noelbaki Village are expected to continue adapting and cooperating with agricultural extension workers in order to increase production in farming activities.

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