

The Effect of i-PUBERS Implementation on Subsidized Fertilizer Distribution Effectiveness

Edi Kuswanto

Department of Public Administration, Universitas 17 Agustus 1945
Cirebon, Cirebon, Indonesia

Ade Setiadi

Department of Public Administration, Universitas 17 Agustus 1945
Cirebon, Cirebon, Indonesia

Rohadin

Department of Public Administration, Universitas 17 Agustus 1945
Cirebon, Cirebon, Indonesia

Abstract: Effective policy implementation is essential to ensure that subsidized fertilizer reaches eligible farmers in accordance with established requirements and allocation quotas. i-PUBERS (Integrated Fertilizer Subsidy System) is a digital platform designed to support the administration and distribution of subsidized fertilizer. This study aims to analyze the relationship between i-PUBERS implementation and the effectiveness of subsidized fertilizer distribution at the Agricultural Extension Center in Sedong District, Cirebon Regency. A quantitative approach with a descriptive-verification design was employed. Data were collected through questionnaires from 233 farmers selected using proportionate stratified random sampling from a population of 555 farmers. The data were analyzed using descriptive statistics, correlation analysis, multiple regression, and path analysis. The results indicate that, i-PUBERS implementation was categorized as Good, with a score of 83.858%, while distribution effectiveness was categorized as Very Good, with a score of 88.028%. The simultaneous test yielded an F-value of 17.2487 ($p < 0.001$), indicating a statistically significant association between the implementation dimensions and distribution effectiveness. The coefficient of determination ($R^2 = 0.4785$) indicates that the model explains 47.85% of the observed variation in distribution effectiveness. Environment and Communication were reported to account for 31.69% and 13.24% of the contribution, respectively; however, these percentages require clarification regarding their calculation and should not be interpreted as confirmed relative effects without consistent supporting statistical results. The findings provide empirical insights into the relationship between digital policy implementation and subsidized fertilizer distribution at the local level.

Keywords: Digital system, i-PUBERS, distribution effectiveness, public administration.

Correspondents Author:

Edi Kuswanto, Department of Public Administration, Universitas 17 Agustus 1945 Cirebon, Cirebon, Indonesia
Email: edhykuswanto@yahoo.co.id

Received September 5, 2026; Revised October 3, 2026; Accepted October 3 2026; Published October 4, 2026.

Introduction

Subsidized fertilizer is an important government policy instrument to support agricultural production and farmers' access to essential agricultural inputs. The policy aims at ensuring that the subsidized fertilizer is delivered to the eligible farmers as per the laid down requirements and allotments ([Dong et al., 2025](#); [WU et al., 2026](#)). Its distribution includes a chain of actors like government institutions, agricultural extension officers, farmer groups, retailers and farmers. Success in subsidized fertilizer distribution therefore depends not only on the availability of fertilizer but also on the accuracy of administrative data, allocation mechanisms and implementation procedures at the local level. The Definitive Plan for Group Needs (*Rencana Definitif Kebutuhan Kelompok* (RDKK) is very important in determining the needs and distribution of subsidized fertilizer. Fertilizer allocations should be based on real conditions and agricultural needs with correct and up to date farmer data. In practice, errors, obsolescence or lack of updates of farmer data may lead to differences between administrative records and field conditions ([Bandelow et al., 2025](#); [Head., 2025](#)). The development of information technology stimulates the digital transformation of subsidized fertilizer management by means of i-PUBERS (Integrated Fertilizer Subsidy System). Such disparities can influence the congruence of the fertilizer distributed with the fertilizer demanded by farmers, which can affect the efficiency of the distribution process. i-PUBERS is a digital platform for managing subsidized fertilizer distribution, including data management, verification and distribution administration ([Setyowiyono et al., 2026](#)). The system implementation is expected to improve data accuracy, transparency, administrative efficiency and effectiveness of subsidized fertilizer distribution. Thus, i-PUBERS becomes not only a technological system but also a tool for the implementation of agricultural public policy. However, the implementation of policy does not necessarily follow from the introduction of a digital system. Several practical problems are encountered in implementing i-PUBERS at the Agricultural Extension Center of Sedong District, Cirebon Regency, including the inaccuracy or outdatedness of RDKK data, unstable internet connections, discrepancies between fertilizer allocations and farmer needs, and variations in the online literacy of implementing officers and farmers. These conditions suggest that the success of digital policy implementation may depend on factors beyond the technology itself ([Indrianti et al., 2026](#)). The effectiveness of subsidized fertilizer distribution can be measured by several dimensions that show the quality of services received by beneficiaries. The dimensions include target accuracy, timeliness, quantity conformance, service convenience, and satisfaction. Target accuracy is about whether subsidized fertilizer reaches the intended beneficiaries, timeliness and quantity conformity are about whether fertilizer is provided according to the required schedule and amount. For farmers, the convenience and satisfaction of service also mean the quality of the distribution

process. These dimensions lay the foundation for assessing the contribution of i-PUBERS implementation to effective subsidized fertilizer distribution. In the existing literature, subsidized fertilizer distribution has been studied from various perspectives, particularly distribution efficiency and satisfaction of farmers' needs. Previous studies have examined the use of digital administrative systems to implement subsidized fertilizer policies, for example, electronic systems for data collection and distribution. The studies underscore the importance of administrative accuracy, policy implementation and service delivery in effective subsidized fertilizer distribution ([Lazuardi et al., 2024](#)). However, the relationship between the implementation of an integrated digital fertilizer system and the effectiveness of subsidized fertilizer distribution has not been studied enough in the local implementation level. In particular, further empirical analysis is needed to distinguish the overall relationship between digital policy implementation and distribution effectiveness from the individual relationships associated with specific implementation dimensions. This distinction is important because a high descriptive implementation score does not necessarily indicate a statistically significant relationship with distribution effectiveness. From a policy implementation perspective, there are several interrelated factors that affect successful implementation. These include the clarity of standards and policy objectives, availability of resources, communication among implementing actors, disposition of implementers, and the implementation environment. These factors are more relevant for i-PUBERS as the system requires coordination of agricultural agencies, extension officers, farmer groups, retailers and farmers. Problems with communication, resources, implementer readiness or the implementation environment may impair the system's effectiveness in practice. The originality of this research is in the combination of the perspective of policy implementation with the measurement of the effectiveness of subsidized fertilizer distribution. This research investigates the effect of i-PUBERS which is characterized by standards and policy objectives, resources, communication, implementer disposition, and environment on distribution effectiveness, not on digitalization only from the perspective of technology adoption and not on fertilizer distribution only by distribution outcomes ([Arodha., 2024](#)). The effectiveness is measured by target accuracy, timeliness, quantity conformance, service convenience and satisfaction. This approach offers an empirical framework to connect the implementation process of a digital public policy with its service outcomes. Digitalization will be helpful, but the existence of i-PUBERS does not mean that the subsidized fertilizer distribution has become fully effective. Data inconsistencies, technological limitations, mismatches in fertilizer allocations and farmers' needs, and differences in digital proficiency pose an important empirical question on the relationship between the implementation of i-PUBERS and the effectiveness of subsidized fertilizer distribution. Therefore, this study aims to analyze the effect of i-PUBERS implementation on distribution effectiveness at the Agricultural Extension Center (BPP)

Sedong District, Cirebon Regency. In particular, it focuses on five implementation dimensions such as standards and policy objectives, resources, communication, implementer disposition and environment. This study provides local empirical evidence on implementation of digital agricultural policy by examining the overall model as well as the individual relationships between these dimensions and distribution effectiveness.

Research Method

This study employed a quantitative research approach to examine the effect of i-PUBERS implementation on the effectiveness of subsidized fertilizer distribution. The research was conducted at the Agricultural Extension Center of Sedong District, Cirebon Regency. The research process included determining the research design, population and sample, operationalizing the research variables, collecting data, testing the research instrument, and analyzing the data using appropriate statistical techniques. The methodological procedures are described in the following subsections.

Research Design

This study took a quantitative approach to research, using a descriptive and verification research design ([Jiang & Ma., 2025](#); [L. Zhang et al., 2025](#)). Descriptive analysis is used to evaluate the implementation of the i-PUBERS system and the effectiveness of subsidized fertilizer distribution, while verification analysis is used to evaluate the effect of i-PUBERS implementation on distribution effectiveness. This research was conducted at the Agricultural Extension Center of Sedong District, Cirebon Regency. The unit of analysis in this study was the farmers who received subsidized fertilizer ([Hargiyana et al., 2025](#); [Soulthoni et al.](#)). The research framework and methodological procedures are illustrated in Figure 1.

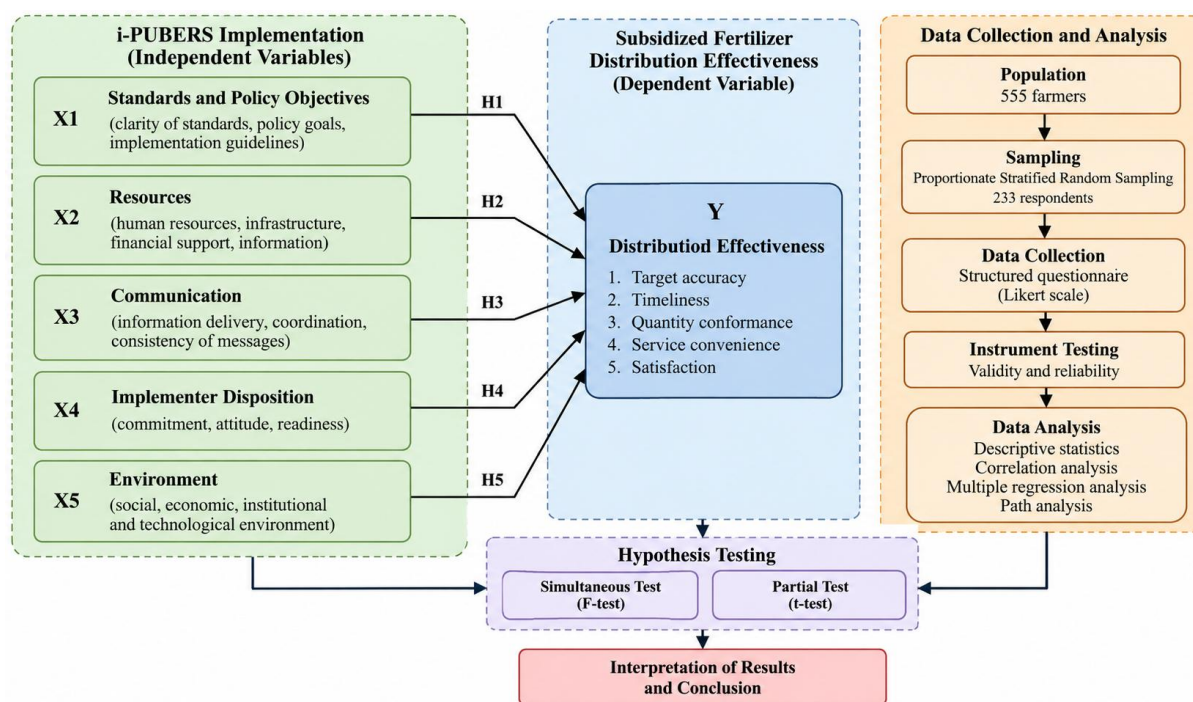


Figure 1 Research Framework and Methodological Procedures

The research framework and methodological procedures used to investigate the association between the implementation of i-PUBERS and the effectiveness of subsidized fertilizer distribution are shown in Figure 1. The independent variable is composed of five dimensions, i.e. standards and policy objectives (X1), resources (X2), communication (X3), implementer disposition (X4) and environment (X5). These dimensions are investigated in relation to distribution effectiveness (Y) which is measured by target accuracy, timeliness, quantity conformity, service convenience and farmer satisfaction. The research procedure starts with determining population and selecting respondents, then collecting data through questionnaire and testing the instrument. The data obtained are then analyzed by descriptive statistics correlation analysis multiple regression and path analysis. Finally, simultaneous and partial hypothesis testing are conducted to test the statistical relationships between the implementation dimensions and distribution effectiveness.

Population and Sample

The population of this research was 555 farmers who received subsidized fertilizers in the working area of BPP Sedong, Cirebon Regency. The sample was determined using the Slovin formula with a margin of error of 5%. The calculation gave a sample size of 232.46 respondents which was rounded off to 233 respondents. Proportionate Stratified Random Sampling according to the number of farmers in each village in the study area was used to select the respondents.

Variables and Measurement

The independent variable was i-PUBERS Implementation (X) operationalized as five dimensions: (1) Standards and Policy Objectives (X1), (2) Resources (X2), (3) Communication (X3), (4) Implementer Disposition (X4), and (5) Environment (X5). The dependent variable was Effectiveness of Subsidized Fertilizer Distribution (Y), which was measured by five dimensions: target accuracy, timeliness, quantity conformity, service convenience, and satisfaction. The statements on the questionnaires were developed based on the operational definition of the variables for measuring each dimension. The instrument for implementing i-PUBERS consisted of three indicators for each of the five dimensions. The effectiveness variable was measured by indicators of the five dimensions of effectiveness ([Guo., 2025](#)).

Data Collection

Primary data was collected directly from respondents by using structured questionnaire. The questionnaire used a five-point response scale ranging from Strongly Good to Strongly Not Good to capture the respondents' perceptions of the implementation of i-PUBERS and the effectiveness of subsidized fertilizer distribution. Secondary data were collected based on relevant documentation and literature sources in an effort to support the analysis ([Jiang & Luo., 2025](#); [X. Zhang et al., 2025](#)).

Instrument Testing

Validity and reliability tests were conducted on the research instrument before being used in statistical analysis. Reliability was determined using the split-half method and the Spearman–Brown reliability coefficient ([Kahveci et al., 2025](#); [Parsons., 2021](#)). Reliability testing was performed by calculating the Pearson correlation between the two split-halves and the Spearman-Brown formula. The analysis was performed on 233 respondents. The results indicate that the dimensions of the implementation variable of the i-PUBERS have met the reliability criteria. The effectiveness variable has a Spearman–Brown coefficient of 0.9341, meaning it has a high level of reliability ([Nevedal et al., 2025](#)).

Data Analysis

The data were analyzed using descriptive statistics, Pearson correlation analysis, multiple regression and path analysis. Descriptive analysis was used to see the level of i-PUBERS implementation and the effectiveness of subsidized fertilizer distribution in terms of the dimensions and indicators measured. Pearson correlation analysis was used to analyze the relationships between the dimensions of i-PUBERS implementation and the effectiveness variable. Then, path analysis was carried out to estimate the direct and indirect effects of the

five dimensions of i-PUBERS implementation on the effectiveness of subsidized fertilizer distribution. The structural model was specified as follows formula (1) below.

$$Y = \rho_{YX_1}X_1 + \rho_{YX_2}X_2 + \rho_{YX_3}X_3 + \rho_{YX_4}X_4 + \rho_{YX_5}X_5 + \rho_{Y\varepsilon}\varepsilon \quad (1)$$

where Y represents the effectiveness of subsidized fertilizer distribution; X_1 represents standards and policy objectives; X_2 represents resources; X_3 represents communication; X_4 represents implementer disposition; and X_5 represents the implementation environment. The significance of the model was evaluated using the F-test to determine whether the five dimensions jointly affected distribution effectiveness. Partial effects were examined using the t-test. The coefficient of determination (R^2) was used to determine the proportion of variance in subsidized fertilizer distribution effectiveness explained by the i-PUBERS implementation variables (Wang & Wang., 2025; Yang et al., 2025).

Hypothesis Testing

The hypothesis testing was performed to test whether the implementation of i-PUBERS had a significant effect to the effectiveness of subsidized fertilizer distribution. The F-test was used to test the simultaneous effect of the five dimensions of i-PUBERS implementation, namely standards and policy objectives (X_1), resources (X_2), communication (X_3), implementer disposition (X_4), and environment (X_5) on distribution effectiveness (Y). The test was performed at 5% of significance level ($\alpha = 0.05$). The null hypothesis was rejected when the calculated F-value was greater than the critical F-value or when the significance probability was less than 0.05. For the individual effect of each dimension of i-PUBERS implementation on the effectiveness of subsidized fertilizer distribution, partial hypothesis testing was carried out using the t-test. The five partial hypotheses examined the individual effects of standards and policy objectives, resources, communication, implementer disposition, and environment on distribution effectiveness. A 5% significance level was used ($\alpha = 0.05$) and a variable was deemed to have a significant partial effect if its p-value was less than 0.05. In addition to significance testing, path analysis was employed to identify the direct, indirect and total effects of each dimension of i-PUBERS implementation on the effectiveness of subsidized fertilizer distribution. The coefficient of determination (R^2) was similarly calculated to measure the proportion of variation in distribution effectiveness explained by the implementation variables. The analysis gave an overall assessment of the overall model and the contribution of each implementation dimension to the effectiveness of subsidized fertilizer distribution.

Result and Discussion

In this section, the empirical results of i-PUBERS implementation and subsidized fertilizer distribution effectiveness at the Agricultural Extension Center of Sedong District, Cirebon Regency are presented. The results are presented by analyzing the research variables and their dimensions descriptively and then testing the hypothesis to test the effect of i-PUBERS implementation on the effectiveness of subsidized fertilizer distribution. The empirical findings are then discussed in terms of how each dimension of implementation contributes to the effectiveness of subsidized fertilizer distribution.

Descriptive Results of i-PUBERS Implementation

The descriptive results show that the implementation of i-PUBERS was generally categorized as Good, with a total variable score of 14,909, a percentage of 83.858%, and an average score of 4.0945. The assessment consisted of five dimensions: Standards and Policy Objectives, Resources, Communication, Implementer Disposition, and Environment.

Table 1 Descriptive Results of i-PUBERS Implementation

Dimension	Total Score	Percentage (%)	Average Score	Category
Standards and Policy Objectives (X1)	2,921	82.51	4.13	Good
Resources (X2)	3,043	85.96	4.30	Very Good
Communication (X3)	3,088	86.75	3.85	Good
Implementer Disposition (X4)	2,676	74.96	3.75	Good
Environment (X5)	3,181	89.10	4.46	Very Good
Total	14,909	83.858	4.0945	Good

The results indicate that Environment (X5) obtained the highest percentage at 89.10%, followed by Communication (X3) at 86.75% and Resources (X2) at 85.96%. Standards and Policy Objectives (X1) obtained 82.51%, while Implementer Disposition (X4) recorded the lowest percentage at 74.96%.

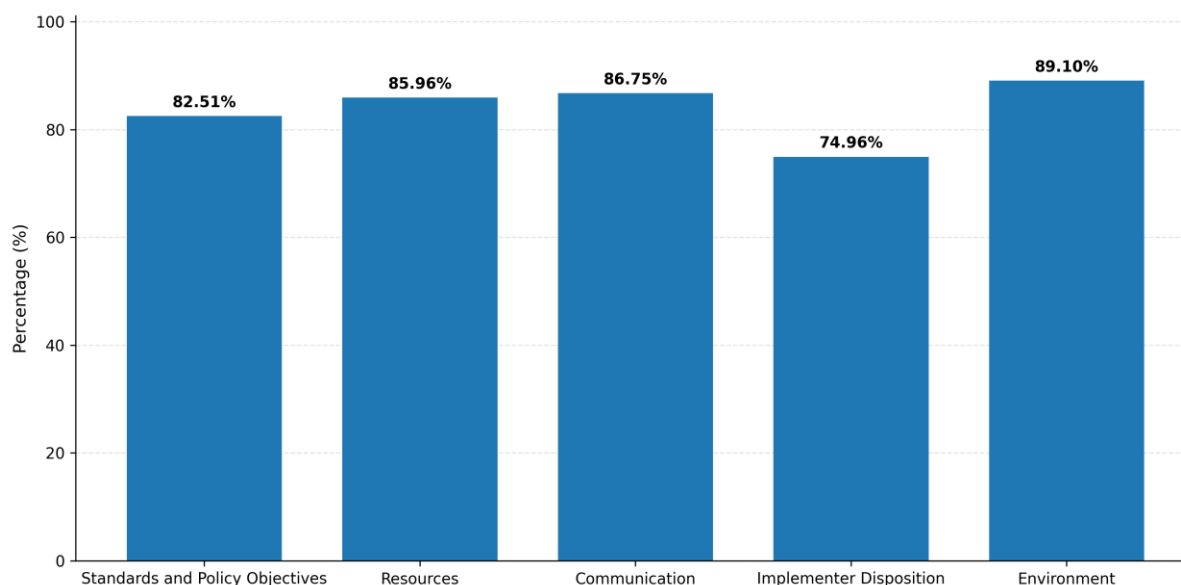


Figure 2 Percentage of i-PUBERS Implementation

The highest score for the Environment dimension was related to government support for i-PUBERS implementation, which reached 91.60%. The dimension also reflected farmers' ability to adapt to the digital system and the supporting technological conditions in the research area. Meanwhile, Implementer Disposition obtained the lowest overall percentage, at 74.96%. Although the commitment of officers was assessed positively at 88.66%, the indicators concerning responsiveness and positive attitudes toward the system were lower, at 69.24% and 66.97%, respectively.

Descriptive Results of Subsidized Fertilizer Distribution Effectiveness

The effectiveness of subsidized fertilizer distribution was categorized as Very Good, with a total variable score of 15,713, a percentage of 88.028%, and an average score of 4.40. The effectiveness variable was measured through five dimensions: Target Accuracy, Timeliness, Quantity Conformity, Service Convenience, and Satisfaction.

Table 2 Descriptive Results of Subsidized Fertilizer Distribution Effectiveness

Dimension	Total Score	Percentage (%)	Average Score	Category
Target Accuracy	3,181	89.10	4.46	Very Good
Timeliness	3,118	87.34	4.37	Very Good
Quantity Conformity	3,074	86.11	4.31	Very Good
Service Convenience	3,178	89.02	4.45	Very Good
Satisfaction	3,162	88.57	4.43	Very Good
Total	15,713	88.028	4.40	Very Good

The results show that Target Accuracy obtained the highest percentage at 89.10%, followed by Service Convenience at 89.02%, Satisfaction at 88.57%, Timeliness at 87.34%, and Quantity Conformity at 86.11%. All five dimensions were categorized as Very Good.

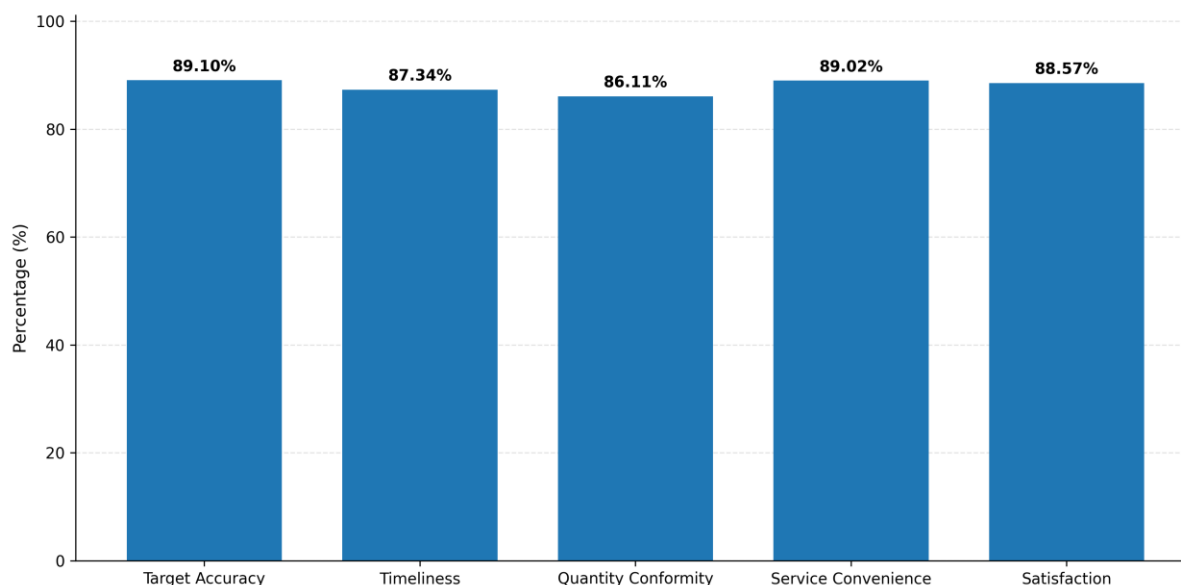


Figure 3 Percentage of Subsidized Fertilizer Distribution Effectiveness

All dimensions scored Very Good, with the lowest score being Quantity Conformity at 86.11%. The indicator of whether the quantity of fertilizer received was in accordance with the needs of the farmers scored 84.62% showing that there is still opportunity for improvement in the congruence of actual farmers' needs and the quantity received.

Correlation Analysis

The correlation analysis reveals different relationships of each dimension of i-PUBERS implementation and the effectiveness of subsidized fertilizer distribution. The correlation was 0.126 between Standards and Policy Objectives (X1) and Y, 0.327 between Resources (X2) and Y, 0.500 between Communication (X3) and Y, 0.104 between Implementer Disposition (X4) and Y, and the highest correlation of 0.648 between Environment (X5) and Y. The multiple correlation coefficient was $R = 0.692$ indicating that there was a significant positive relationship between the five implementation dimensions as a whole and distribution effectiveness.

Table 3 Correlation between i-PUBERS Implementation Dimensions and Distribution Effectiveness

Variable	Correlation with Y	Relationship
Standards and Policy Objectives (X1)	0.126	Very Low
Resources (X2)	0.327	Low
Communication (X3)	0.500	Moderate
Implementer Disposition (X4)	0.104	Very Low
Environment (X5)	0.648	Strong
Multiple Correlation (R)	0.692	Strong

The strongest bivariate relationship was observed for Environment (X5), suggesting that government support, farmer adaptation, and technological conditions are closely associated with distribution effectiveness. Communication also demonstrated a moderate relationship with effectiveness, indicating the importance of coordination and information delivery in the implementation process.

Simultaneous Hypothesis Testing

The simultaneous hypothesis test was conducted to determine if the five dimensions of i-PUBERS implementation together have an impact on the effectiveness of subsidized fertilizer distribution. The calculated value of F was 17.2487, and the value of F-table was 2.3113, and the significance value was 0.000. The calculated F-value was more than critical value and the significance was less than 0.05, so the five dimensions had a significant effect on distribution effectiveness together.

Table 4 Simultaneous Hypothesis Test

Test	F-value	F-table	p-value	Decision
Simultaneous effect	17.2487	2.3113	0.000	Significant

The coefficient of determination was $R^2 = 0.478$, reported as 47.85%. This means that the five dimensions of i-PUBERS implementation explain 47.85% of the variation in subsidized fertilizer distribution effectiveness, while the remaining 52.15% is associated with factors outside the research model.

Partial Hypothesis Testing

The partial hypothesis test examined the individual effects of the five dimensions of i-PUBERS implementation on subsidized fertilizer distribution effectiveness. According to the reported statistical results, Standards and Policy Objectives (X1) and Communication (X3) had significant effects, while Resources (X2) and Implementer Disposition (X4) did not show significant effects.

Table 5 Partial Hypothesis Testing

Variable	t-value	t-table	p-value	Result
Standards and Policy Objectives (X1)	2.3975	1.6612	0.01	Significant
Resources (X2)	1.3497	1.6612	0.09	Not significant
Communication (X3)	2.4644	1.6612	0.01	Significant
Implementer Disposition (X4)	0.8274	1.6612	0.21	Not significant
Environment (X5)	-	1.6612	-	See note

The available research document does not provide a reliable independent t-test result for X5. Therefore, no significance decision is assigned to X5 here. This is important because the path analysis identifies X5 as the dimension with the largest contribution. We should not invent or infer its p-value.

Path Analysis

The path analysis was used to determine the contribution of each i-PUBERS implementation dimension to subsidized fertilizer distribution effectiveness. The resulting structural equation is formula (1):

$$Y = -0.286X_1 + 0.172X_2 + 0.265X_3 + 0.089X_4 + 0.489X_5 + 0.722\varepsilon$$

The results show that Environment (X5) had the largest path coefficient at 0.489, followed by Communication (X3) at 0.265, Resources (X2) at 0.172, Implementer Disposition (X4) at 0.089, and Standards and Policy Objectives (X1) at -0.286.

Table 6 Path Coefficients and Total Contributions

Variable	Path Coefficient	Total Contribution (%)
Standards and Policy Objectives (X1)	-0.286	-3.62
Resources (X2)	0.172	5.61
Communication (X3)	0.265	13.24
Implementer Disposition (X4)	0.089	0.92
Environment (X5)	0.489	31.69

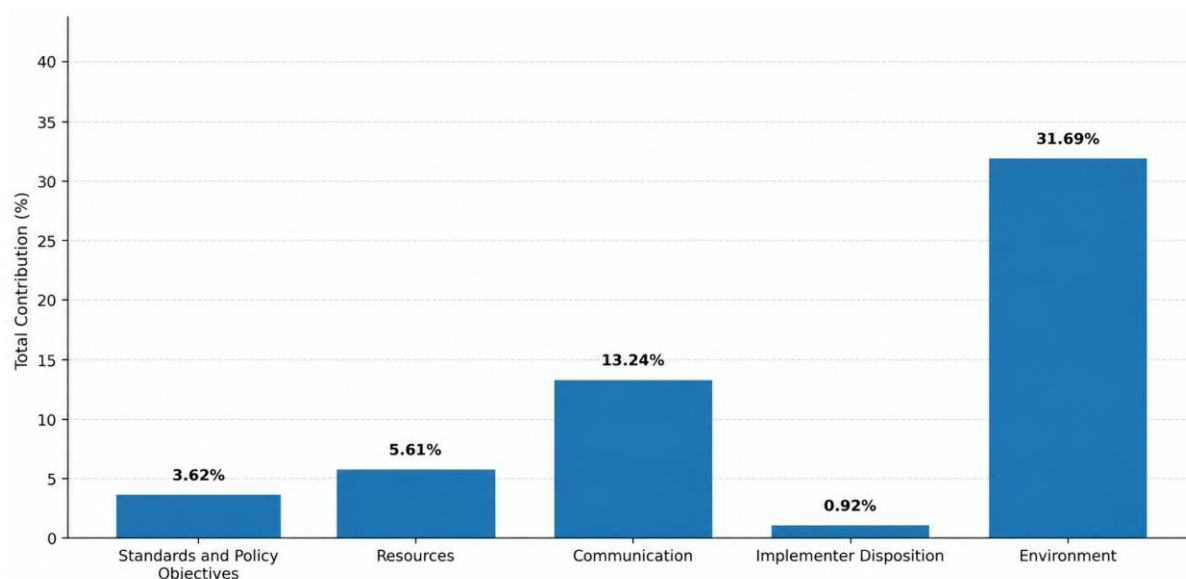


Figure 3 Total Contribution of i-PUBERS Implementation Dimensions

The path analysis indicates that Environment (X₅) made the largest contribution to distribution effectiveness, at 31.69%. Communication (X₃) contributed 13.24%, Resources (X₂) contributed 5.61%, and Implementer Disposition (X₄) contributed 0.92%. Standards and Policy Objectives (X₁) recorded a total contribution of -3.62% in the reported path decomposition.

Discussion

The result of the empirical study shows that the implementation of i-PUBERS at BPP Sedong is generally quite well established with a total score of 83.858%. The level of effectiveness of subsidized fertilizer distribution was at Very Good level of 88.028%. Simultaneous test shows that the five dimensions of i-PUBERS implementation simultaneously have a significant effect on distribution effectiveness, and the model explains 47.85% of the variation of effectiveness. The descriptive results show that Environment is the strongest dimension of implementation of i-PUBERS with a score 89.10%. The reasons for this finding are government support, technological readiness and farmers' ability to adapt to the digital system. The findings indicate that the success of digital public services depends on the creation of a supportive institutional and technological environment, not just the digital platform itself.

Communication is also important. Communication is an important part in linking policy, implementing agents and beneficiaries as shown by the 86.75% score and 0.500 correlation with distribution effectiveness. Proper communication and coordination during the distribution process can help ensure that i-PUBERS is applied consistently. The results of the Quantity Conformity are also of importance. Distribution effectiveness was generally rated Very Good. However, Quantity Conformity scored the lowest dimension score at 86.11%. This

means that the success of distribution is not only in providing fertilizer to the right beneficiaries, but also in the amount received according to actual agricultural needs. The results show that i-PUBERS implementation makes a meaningful contribution to subsidized fertilizer distribution effectiveness but does not explain all the variations in effectiveness. R^2 of 47.85% gives 52.15% to be accounted for by factors outside of the model. The paper discusses possible external factors like national distribution policies, availability of fertilizers from producers, transportation infrastructure, retailers' capacity, climatic conditions and farmers' characteristics.

Conclusions

The objective of this study was to analyze the relationship between the implementation of i-PUBERS and the effectiveness of subsidized fertilizer distribution at the Agricultural Extension Center (BPP) in Sedong District, Cirebon Regency. The descriptive results show that i-PUBERS implementation was categorized as Good, with a score of 83.858%, while distribution effectiveness was categorized as Very Good, with a score of 88.028%. The simultaneous test yielded an F-value of 17.2487, which exceeded the critical F-value of 2.3113. The p-value should be reported as $p < 0.001$. These results indicate that distribution effectiveness was statistically significantly associated with the five implementation dimensions considered jointly. The coefficient of determination ($R^2 = 0.4785$) shows that the model explains 47.85% of the observed variation in distribution effectiveness, while the remaining 52.15% is associated with factors not included in the model.

Partial test results show that Standards and Policy Objectives (X1) and Communication (X3) were statistically significant. The t-values were 2.3975 and 2.4644, respectively, with reported p-values of 0.01. Resources (X2) and Implementer Disposition (X4) were not statistically significant ($p = 0.09$ and $p = 0.21$, respectively). The partial-test result for Environment (X5) cannot be concluded until its test statistic and significance level have been verified. Although X5 has a reported path coefficient of 0.489 and a total contribution of 31.69%, these values alone do not establish that it has the strongest statistically significant relationship with distribution effectiveness. Communication (X3) has a reported path coefficient of 0.265 and a total contribution of 13.24%. The calculation procedure for these contribution percentages should be explained in the Methods section.

Among the descriptive dimensions of distribution effectiveness, Target Accuracy obtained the highest score (89.10%), while Quantity Conformity obtained the lowest score (86.11%). These descriptive results indicate relative strengths and potential areas for improvement but do not, by themselves, establish the statistical effects of individual implementation dimensions. The results emphasize the need for clear policy standards and effective communication in

implementing i-PUBERS. Practical measures could include better alignment between fertilizer allocations and farmers' needs, while taking local implementation conditions into account. Additional studies could examine other factors beyond the five dimensions incorporated into this model to develop a more comprehensive understanding of subsidized fertilizer distribution effectiveness.

References

- Arodha, D. (2024). Optimizing Strategy of Subsidized Fertilizer Distribution to POKTAN (Farmer Groups). *Idarotuna: Journal of Administrative Science*, 5(2), 184-195.
- Bandelow, N. C., Hornung, J., & Schröder, I. (2025). Policy Design, Diffusion, and Policy Instrument Attitudes. *Review of Policy Research*, 42(4), 762-767.
- Dong, D., Huang, H., Zhou, A., & Dong, C. (2025). A systematic analysis of China's noncommunicable disease policies: policy themes, policy instruments, and policy effectiveness from 2009 to 2025. *Frontiers in public health*, 13, 1643400.
- Guo, W. (2025). Communication and Policy Response: A Big Data Quantitative Study of Coastal Cities in China. Proceedings of the 2025 4th International Conference on Public Service, Economic Management and Sustainable Development (PESD 2025),
- Hargiyana, G. P. T., Umaroh, S. T., Syaprita, I. K., Alam, R. B., Putra, O. R. S., & Hibatullah, N. A. (2025). Starter Technology Innovation on Drag Scooter Engines for Performance and Efficiency. Proceedings International Conference on Aligning Sustainability with Vocational Innovations (ICASVI),
- Head, B. W. (2025). Designing for complexity and uncertainty–policy instruments for complex environmental issues. *Policy Design and Practice*, 8(3), 291-304.
- Indrianti, M. A., Suparwata, D. O., Djibrani, M. M., & Ripo, N. (2026). Policy Literacy and Farmer Capacity as Determinants of Corn Productivity: An Educational Governance Perspective from Gorontalo. *Journal of General Education and Humanities*, 5(4), 4705–4720-4705–4720.
- Jiang, L., & Ma, T. (2025). Adaptive Governance and Policy Evolution of the Yangtze River Fishing Ban: A Quantitative Analysis (2002–2024). *Water*, 17(21), 3032.
- Jiang, X., & Luo, L. (2025). A quantitative study of China's rehabilitation policies from the perspective of policy tools. *Frontiers in public health*, 13, 1676931.
- Kahveci, S., Bathke, A. C., & Blechert, J. (2025). Reaction-time task reliability is more accurately computed with permutation-based split-half correlations than with Cronbach's alpha. *Psychonomic Bulletin & Review*, 32(2), 652-673.
- Lazuardi, F. H., Sukowati, P., & Widjajani, R. (2024). Use of Farmer Cards in the Distribution of Subsidized Fertilizer in Pasuruan Regency, Indonesia. *International Journal of*

Research in Social Science and Humanities (IJRSS) ISSN: 2582-6220, DOI: 10.47505/IJRSS, 5(4), 31-40.

- Nevedal, A. L., Kowalski, C. P., Finley, E. P., Fix, G. M., Hamilton, A. B., & Koenig, C. J. (2025). Optimizing qualitative methods in implementation research: a resource for editors, reviewers, authors, and researchers to dispel ten common misperceptions about qualitative research methods. *Implementation Science*, 21(1), 4.
- Parsons, S. (2021). Splithalf: Robust estimates of split half reliability. *Journal of Open Source Software*, 6(60), 3041.
- Setyowiyono, A., Adeniar, A. A., Arbianputra, R. A., & Hardiyansyah, H. (2026). Analysis of Farmer's Intention to Adopt The I-Pubers Application for Redemption of Subsidized Fertilizer in Madiun Regency. *Revenue Journal: Management and Entrepreneurship*, 4(2), 197-215.
- Soulthoni, H. P. N., Suaib, E., & Jabar, A. S. Digital Transformation of Subsidized Fertilizer Distribution: Evidence From Farmer Groups in Rural Eastern Indonesia.
- Wang, J., & Wang, B. (2025). A Systemic Evaluation of Energy Digital Transformation Policies for the G20 Group of Countries: A Four-Dimensional Framework and Cross-National Quantitative Analysis. *Sustainability*, 17(20), 9301.
- WU, Z., XI, Y., & HU, L. (2026). Characteristics of Policy Instrument Selection and Combination for Weight Management in China: a Content Analysis of National Policy Documents (2016-2025). *Chinese General Practice*, 29(20), 2766.
- Yang, L., Chai, Y., Tang, A.-m., & Wang, X.-j. (2025). Textual quantitative research and implications of China's medical education policies—analysis based on the “tool-development-intensity” three-dimensional framework. *BMC Medical Education*, 25(1), 1408.
- Zhang, L., Wang, Y., Xu, Z., & Chen, L. (2025). Quantitative Study on the Synergistic Effect of China's Plastic Restriction Policy from 2008 to 2025. *Sustainability*, 17(16), 7355.
- Zhang, X., Ming, J., Cheng, X., Chen, Q., Hu, S., & Hu, W. (2025). Quantitative Evaluation of China's High-Standard Farmland Construction Policy: A Novel Approach Using the PMC Index Model (2011–2024). *Food and Energy Security*, 14(3), e70106.