IJEC
International Journal of Economics
https://ejournal.ipinternasional.com/index.php/ijec
e-ISSN: 2961-712X
Vol. 4 Issue 2, July-December 2025
DOI: 10.55299/ijec.v4i2.1256

Local Food Security Analysis Based on Supply Chain Management: A Case Study of Rice Availability and Demand in Bojonegoro Regency in 2024

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Article history: received June 11, 2025; revised June 27, 2025; accepted July 14, 2025

Abstract

Objective– This study aims to analyze the balance between rice availability and rice demand across 28 districts in Bojonegoro Regency in 2024 by using the availability-to-demand (A/D) ratio as an indicator of local food security. Design/methodology/approach – Using a quantitative descriptive method, this study utilizes secondary data from the Central Statistics Agency (BPS) and the National Food Agency. The analysis includes rice production, population data, and consumption levels to calculate rice availability, rice demand, and A/D ratios in each district. Findings – The results show that 26 districts (92.86%) are in a rice surplus condition, while 2 districts (7.14%), Bojonegoro and Sekar are in deficit. Kalitidu district recorded the highest A/D ratio of 14.20, while Bojonegoro and Sekar had the lowest at 0.79 and 0.67 respectively. These disparities highlight the uneven spatial distribution of food availability. Research limitations/implications – This study focuses solely on rice as a staple food and uses regional-level data from Bojonegoro Regency in 2024. Future research can expand the scope to include other staple commodities and multiple time periods for longitudinal analysis. Practical implications – The A/D ratio serves as an effective tool for identifying surplus and deficit regions, which can inform local food distribution policies, emergency stock planning, and targeted agricultural development. Originality/value – This study contributes to the literature by applying the A/D ratio as a spatial indicator for food security assessment at the district level, offering practical insights for policymakers in managing surplus and deficit conditions more effectively.

Keywords: Food Security, Supply Chain Management, Rice Availability and Demand

INTRODUCTION

Food is a basic human need that plays a strategic role in realizing national resilience, from a social, economic, and political perspective. Law Number 18 of 2012 concerning Food stipulates that the state is obliged to ensure the availability, affordability, and equitable fulfillment of food consumption at the national, regional, and individual levels. Food availability is a fundamental subsystem in achieving food security.

The food security system is influenced by several interacting factors, including population growth, climate change, resource use, consumption patterns, governance, resource allocation and distribution issues that are under pressure and uncertainty, land use, environmental consequences, and social acceptance.(Melkonyan et al., 2017) (Lovell, 2010).Food security, particularly rice self-sufficiency, presents a challenge for the Indonesian government due to dynamic conditions and changing factors

over time. Therefore, planning for a policy system requires knowledge and observation of the overall system dynamics (Fristovana et al., 2020).

The FAO states that the dimensions of food security consist of four aspects: food availability, food access, utilization, and stability. These four indicators describe several aspects, including supply, demand, distribution, utilization, and efforts to maintain price stability for food commodities. Based on this definition, it can be concluded that food security encompasses several aspects: (1) adequate food availability, (2) affordable access to food, (3) food utilization, and (4) food price stability.

Food availability can be met from domestic production or imports for certain food commodities that cannot yet be met from domestic production (National Food Agency, 2024).

Among various food commodities, rice is the main staple food for the majority of the Indonesian population. Therefore, sufficient and equitable rice availability is a crucial indicator for ensuring food security in a region or country (FAO, 2021).

At the national level, the government has implemented various strategies to maintain stable rice supply and prices, including increasing domestic production, optimizing distribution, and strengthening government food reserves. However, challenges remain due to climate fluctuations, land conversion, reliance on traditional agricultural systems, and increasingly complex supply chain disruptions (National Food Agency, 2023). Therefore, regional-level analysis is crucial for identifying potential, challenges, and projecting rice demand and availability more accurately and contextually.

Bojonegoro Regency is an agricultural region in East Java Province that contributes significantly to rice production. According to BPS data (2024), Bojonegoro is the third-largest rice producer in East Java after Ngawi and Lamongan Regencies, with the majority of the population relying on the agricultural sector for their livelihoods. However, population growth, consumption dynamics, and extreme climate change also affect the balance between rice availability and demand in this region. The population of 1,363,058 (BPS, 2024) is a factor that largely influences household rice needs in Bojonegoro Regency.If food availability is insufficient due to greater demand than production, it will result in price fluctuations and even social stability problems (National Food Agency, 2024).

Analyzing rice availability and demand at the regional level, such as in Bojonegoro, is crucial not only to ensure local food sufficiency but also as a basis for formulating regional and national food distribution policies. Several previous studies have shown that a mismatch between production and consumption can lead to vulnerability to food inflation, dependence on external supplies, and reduced farmer welfare (Suryana & Hermanto, 2020; Fitriani et al., 2022).

THEORETICAL STUDY AND RESEARCH MODEL

1. *Food security*

Food security is defined as the condition of households having sufficient food, both in quantity and quality, that is safe, equitable, and affordable (Law of the Republic of Indonesia Number 18 of 2012 concerning Food). FAO (2009) details four main dimensions of food security: availability, access, utilization, and stability. These four aspects are interrelated and form the foundation of sustainable food security policies.

Maxwell and Smith (1992) emphasize that inequality in one dimension, for example in availability, can weaken the overall food security system, especially in areas with high production fluctuations.

1) *Availability and Demand for Rice*

Rice availability is the total amount of rice production derived from harvested area and agricultural productivity. Conversely, rice demand is calculated based on population size and per capita consumption levels. A mismatch between these two components will result in a rice surplus or deficit (National Food Agency, 2024; Fitriani et al., 2022).

2) *Imbalance of Food Surplus and Deficit*

The mismatch between food availability and demand can lead to food inflation, dependence on external supplies, and a decline in farmer welfare (Lovell, 2010; World Bank, 2008). Dewi, Arifin, and Susilowati (2020) noted that even areas within food-surplus provinces can experience deficits at the sub-district level, particularly if land conversion or irrigation constraints occur. This imbalance underscores the importance of a local (micro) analysis approach to more precisely identify food-vulnerable areas.

3) ***RatioAvailability-to-Demand (A/D Ratio)***

This ratio is used to measure the balance between availability and demand. An A/D value > 1 indicates a surplus, while an A/D value < 1 indicates a deficit. This ratio can be used as an indicator of local food security status and a basis for regional classification for policy formulation (Suryana & Hermanto, 2020).

4) Food Supply Chain Management and Surplus/Deficit Management

Rice surpluses and deficits are conditions of imbalance between production and consumption in a region. A surplus occurs when production exceeds consumption needs, while a deficit occurs when demand exceeds production (Suryana & Hermanto, 2020). Within the framework of food management, this situation is closely related to production planning, distribution, and stock control.

According to Soeharjo and Widi (2019), food availability management in surplus areas needs to be directed at maintaining distribution efficiency and avoiding excess stock, which could lower prices for farmers. Conversely, deficit areas require an adaptive logistics management approach to ensure timely delivery of supplies from other areas at efficient logistics costs.

Food supply chain management is a crucial tool in addressing this imbalance. Chopra and Meindl (2016) state that distribution network planning and demand management play a vital role in bridging the gap between surplus and deficit.

Furthermore, a study by Simatupang and Sridharan (2005) explains that collaborative management between producers, distributors, and the government can increase the responsiveness of regional food systems. In the context of rice, strengthening regional-based information systems and increasing coordination between regions (for example through inter-regional rice reserves) is very necessary to maintain price stability and reduce dependence on external supplies.

Surplus management is also closely linked to national food procurement and reserve policies. According to the National Food Agency (2023), regions with high surpluses can be integrated into regional rice reserve centers, with the government purchasing farmers' harvests to maintain price and supply stability in deficit areas.

RESEARCH METHODS

This research is quantitative, presenting a discussion based on data provided by authorized agencies. Therefore, the analysis technique used is quantitative descriptive analysis using secondary data. Secondary data collection was conducted by inventorying documents from the Bojonegoro Regency in Figures (BPS, 2024) and the Bojonegoro Regency Food Security and Agriculture Service.

Researchers used a research model by calculating the availability and need for rice referring to the Technical Instructions published by the National Food Agency in 2024, as follows:

1. Rice Availability

Table 1
Conversion Rate of GKG to Ready-to-Eat Rice in 2024

No	Uraian	Konversi	Penghitungan	Satuan	Sumber
1	**Produksi GKG**			**Ton**	**KSA BPS**
2	**Penggunaan GKG**	**0,0682**	**0,0682 x (1)**		
	a. Bibit/Benih	0,0090	0,0090 x (1)	Ton	
	b. Pakan Ternak	0,0044	0,0044 x (1)	Ton	
	c. Bahan Baku Industri Non Makanan	0,0056	0,0056 x (1)	Ton	**NBM**
	d. Susut/tercecer	0,0492	0,0492 x (1)	Ton	
3	**GKG yang Diolah Menjadi Beras**		**(1) - (2)**	Ton	
4	**Produksi Beras**	**lampiran 13**	**(3) x konversi**	Ton	**SKGB 2018**
5	**Penggunaan Beras Untuk Non Pangan**	**0,0333**	**0,0333 x (4)**	Ton	
	a.Pakan Ternak/Unggas	0,0017	0,0017 x (4)	Ton	**NBM**
	b. Industri Non Makanan	0,0066	0,0066 x (4)	Ton	
	c. Tercecer/susut	0,0250	0,025 x (4)	Ton	
6	**Produksi Beras Siap Konsumsi**		**(4) - (5)**	Ton	

Keterangan:
KSA = Kerangka Sample Area
NBM = Neraca Bahan Makanan
SKGB = Survei Konversi Gabah Beras

Source: Bapanas, 2024

Rice Needs

Table 2
Consumption Figures for Rice Needs in 2024

Uraian	Angka Konsumsi	Sumber Data
Konsumsi Rumah Tangga (RT)	Angka susenas nasional/provinsi/ kabupaten/kota (Kg/Kap/Th)	Susenas Triwulan I BPS
Konsumsi nonRumah Tangga (nonRT)	Angka survei Bapok provinsi (Kg/Kap/Th)	Survei Bapok BPS 2017

5) ***RatioAvailability-to-Demand (A/D Ratio)***
The availability-to-demand (A/D) ratio is a quantitative indicator used to measure the level of adequacy of rice availability to meet consumption needs in a region within a certain period.
A/D Ratio Formula:
A/D Ratio = Rice Consumption Needs (tons)
Rice Availability (tons)

Interpretation of A/D Ratio Value:

A/D ratio	Interpretation
A/D > 1	Surplus → Rice availability exceeds consumption needs.
A/D = 1	Balanced → Availability is equal to consumption needs.
A/D < 1	Deficit → Consumption needs are greater than availability.

RESULTS AND ANALYSIS
Rice availability is calculated based on dry milled grain (GKG) production in 28 sub-districts, minus GKG requirements, which include animal feed, seeds, non-food industries, and lost/lost rice. The results are then converted into rice production with a conversion rate of 64.02%, resulting in the following results:

Table 3
Availability of GKG in Bojonegoro Regency in 2024

NO	KECAMATAN	PROD. GKG (TON)	KEBUTUHAN GKG (Ton)				KETERSEDIAAN GKG (TON)	PRODUKSI BERAS (TON)
			PAKAN TERNAK	BENIH	INDUSTRI NON MAKANAN	TERCECER/ SUSUT		
1	MARGOMULYO	5.551,04	24,42	49,96	31,09	273,11	5.172,46	3.311,41
2	NGRAHO	31.765,89	139,77	285,89	177,89	1.562,88	29.599,45	18.949,57
3	TAMBAKREJO	26.848,53	118,13	241,64	150,35	1.320,95	25.017,46	16.016,18
4	NGAMBON	3.590,33	15,80	32,31	20,11	176,64	3.345,47	2.141,77
5	SEKAR	3.138,77	13,81	28,25	17,58	154,43	2.924,71	1.872,40
6	BUBULAN	4.179,87	18,39	37,62	23,41	205,65	3.894,80	2.493,45
7	GONDANG	11.074,15	48,73	99,67	62,02	544,85	10.318,90	6.606,16
8	TEMAYANG	17.182,22	75,60	154,64	96,22	845,37	16.010,40	10.249,86
9	SUGIHWARAS	21.363,40	94,00	192,27	119,64	1.051,08	19.906,42	12.744,09
10	KEDUNGADEM	56.032,60	246,54	504,29	313,78	2.756,80	52.211,18	33.425,60
11	KEPOHBARU	62.490,26	274,96	562,41	349,95	3.074,52	58.228,42	37.277,84
12	BAURENO	44.224,79	194,59	398,02	247,66	2.175,86	41.208,66	26.381,78
13	KANOR	57.037,07	250,96	513,33	319,41	2.806,22	53.147,14	34.024,80
14	SUMBERREJO	63.456,09	279,21	571,10	355,35	3.122,04	59.128,38	37.853,99
15	BALEN	46.499,39	204,60	418,49	260,40	2.287,77	43.328,13	27.738,67
16	SUKOSEWU	41.980,77	184,72	377,83	235,09	2.065,45	39.117,68	25.043,14
17	KAPAS	44.351,04	195,14	399,16	248,37	2.182,07	41.326,30	26.457,10
18	BOJONEGORO	11.277,00	49,62	101,49	63,15	554,83	10.507,91	6.727,16
19	TRUCUK	18.606,83	81,87	167,46	104,20	915,46	17.337,84	11.099,69
20	DANDER	55.861,07	245,79	502,75	312,82	2.748,36	52.051,34	33.323,27
21	NGASEM	55.112,99	242,50	496,02	308,63	2.711,56	51.354,28	32.877,01
22	KALITIDU	78.747,73	346,49	708,73	440,99	3.874,39	73.377,13	46.976,04
23	GAYAM	31.162,46	137,11	280,46	174,51	1.533,19	29.037,18	18.589,60
24	MALO	28.487,47	125,34	256,39	159,53	1.401,58	26.544,62	16.993,87
25	PURWOSARI	7.970,78	35,07	71,74	44,64	392,16	7.427,17	4.754,87
26	PADANGAN	26.173,86	115,16	235,56	146,57	1.287,75	24.388,80	15.613,71
27	KASIMAN	25.181,07	110,80	226,63	141,01	1.238,91	23.463,72	15.021,47
28	KEDEWAN	3.767,50	16,58	33,91	21,10	185,36	3.510,55	2.247,46
KABUPATEN BOJONEGORO		**883.114,95**	**3.885,71**	**7.948,03**	**4.945,44**	**43.449,26**	**822.886,51**	**526.811,94**

Source: DKPP Bojonegoro, 2024

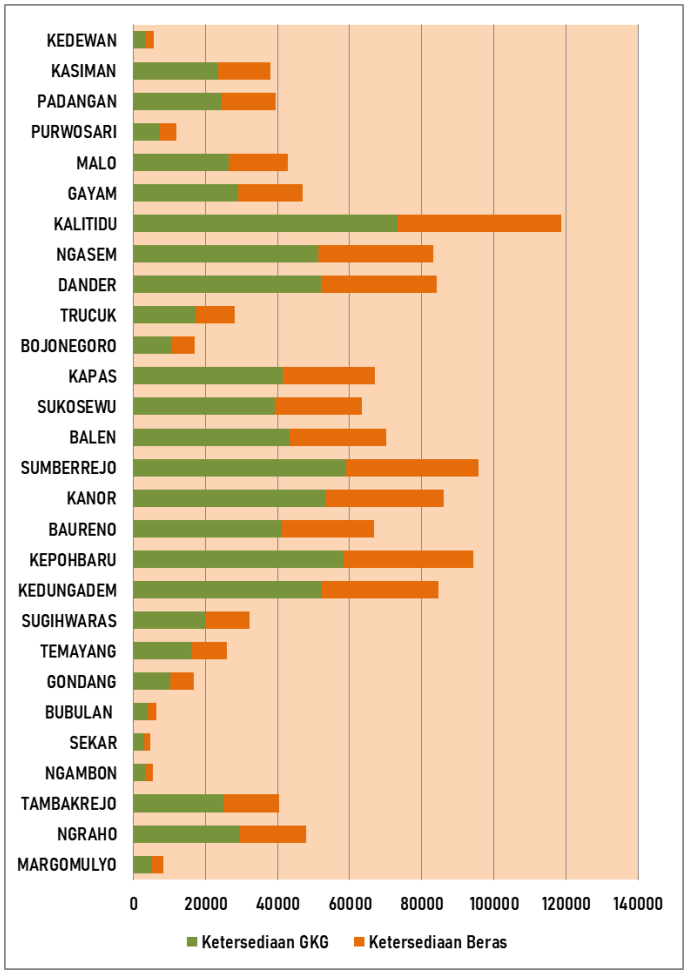
Next, rice production is reduced by rice requirements which include animal feed, non-food industry, and scattered/shrinkage, then the rice availability figure is obtained as in the following table:

Table 4
Rice Availability in Bojonegoro Regency in 2024

NO	KECAMATAN	PRODUKSI BERAS (TON)	KEBUTUHAN BERAS (Ton)			KETERSEDIAAN BERAS (TON)
			PAKAN TERNAK	INDUSTRI NON MAKANAN	TERCECER /SUSUT	
1	MARGOMULYO	3.311,41	5,63	21,86	82,79	3.201,14
2	NGRAHO	18.949,57	32,21	125,07	473,74	18.318,55
3	TAMBAKREJO	16.016,18	27,23	105,71	400,40	15.482,84
4	NGAMBON	2.141,77	3,64	14,14	53,54	2.070,45
5	SEKAR	1.872,40	3,18	12,36	46,81	1.810,05
6	BUBULAN	2.493,45	4,24	16,46	62,34	2.410,42
7	GONDANG	6.606,16	11,23	43,60	165,15	6.386,17
8	TEMAYANG	10.249,86	17,42	67,65	256,25	9.908,53
9	SUGIHWARAS	12.744,09	21,66	84,11	318,60	12.319,71
10	KEDUNGADEM	33.425,60	56,82	220,61	835,64	32.312,52
11	KEPOHBARU	37.277,84	63,37	246,03	931,95	36.036,48
12	BAURENO	26.381,78	44,85	174,12	659,54	25.503,27
13	KANOR	34.024,80	57,84	224,56	850,62	32.891,78
14	SUMBERREJO	37.853,99	64,35	249,84	946,35	36.593,45
15	BALEN	27.738,67	47,16	183,08	693,47	26.814,97
16	SUKOSEWU	25.043,14	42,57	165,28	626,08	24.209,20
17	KAPAS	26.457,10	44,98	174,62	661,43	25.576,08
18	BOJONEGORO	6.727,16	11,44	44,40	168,18	6.503,15
19	TRUCUK	11.099,69	18,87	73,26	277,49	10.730,07
20	DANDER	33.323,27	56,65	219,93	833,08	32.213,60
21	NGASEM	32.877,01	55,89	216,99	821,93	31.782,21
22	KALITIDU	46.976,04	79,86	310,04	1.174,40	45.411,74
23	GAYAM	18.589,60	31,60	122,69	464,74	17.970,57
24	MALO	16.993,87	28,89	112,16	424,85	16.427,97
25	PURWOSARI	4.754,87	8,08	31,38	118,87	4.596,54
26	PADANGAN	15.613,71	26,54	103,05	390,34	15.093,77
27	KASIMAN	15.021,47	25,54	99,14	375,54	14.521,26
28	KEDEWAN	2.247,46	3,82	14,83	56,19	2.172,62
					-	
KABUPATEN BOJONEGORO		**526.811,94**	**895,58**	**3.476,96**	**13.170,30**	**509.269,11**

Source: DKPP Bojonegoro, 2024

The availability of GKG and the availability of rice in Bojonegoro Regency in 2024 are further presented in the following diagram:



Source: DKPP Bojonegoro, 2024

Figure 1. Availability of GKG and Rice Availability in Bojonegoro Regency in 2024

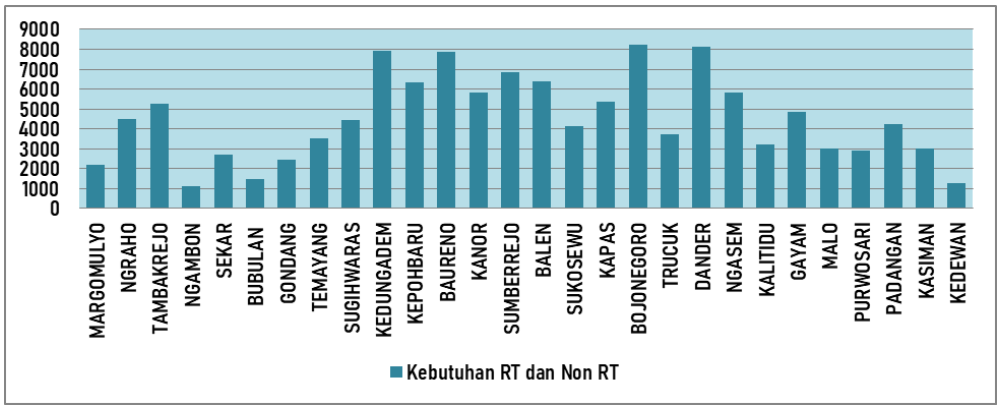
The rice needs of Bojonegoro Regency in 2025 consist of household (RT) consumption and non-household (nonRT) consumption multiplied by the population, as shown in the following table:

Table 5
Rice Needs in Bojonegoro Regency in 2024

NO	KECAMATAN	JUMLAH PENDUDUK (JIWA)	KEBUTUHAN RT dan NON RT
1	MARGOMULYO	23.403	2.177,85
2	NGRAHO	48.362	4.500,50
3	TAMBAKREJO	56.583	5.265,53
4	NGAMBON	11.944	1.111,49
5	SEKAR	28.845	2.684,27
6	BUBULAN	15.700	1.461,02
7	GONDANG	26.570	2.472,57
8	TEMAYANG	37.897	3.526,64
9	SUGIHWARAS	47.798	4.448,01
10	KEDUNGADEM	85.289	7.936,87
11	KEPOHBARU	68.069	6.334,40
12	BAURENO	84.557	7.868,75
13	KANOR	62.583	5.823,88
14	SUMBERREJO	73.672	6.855,81
15	BALEN	68.881	6.409,96
16	SUKOSEWU	44.579	4.148,46
17	KAPAS	57.750	5.374,13
18	BOJONEGORO	88.449	8.230,93
19	TRUCUK	40.132	3.734,62
20	DANDER	87.386	8.132,01
21	NGASEM	62.822	5.846,12
22	KALITIDU	34.377	3.199,07
23	GAYAM	52.194	4.857,10
24	MALO	32.541	3.028,22
25	PURWOSARI	31.030	2.887,61
26	PADANGAN	45.506	4.234,72
27	KASIMAN	32.392	3.014,35
28	KEDEWAN	13.747	1.279,28
KABUPATEN BOJONEGORO		**1.363.058**	**126.844,17**

Source: DKPP Bojonegoro, 2024

The needs of RT and Non RT in Bojonegoro Regency in 2024 are further presented in the following diagram:



Source: DKPP Bojonegoro, 2024

Figure 2. Needs of RT and Non-RT in Bojonegoro Regency in 2024

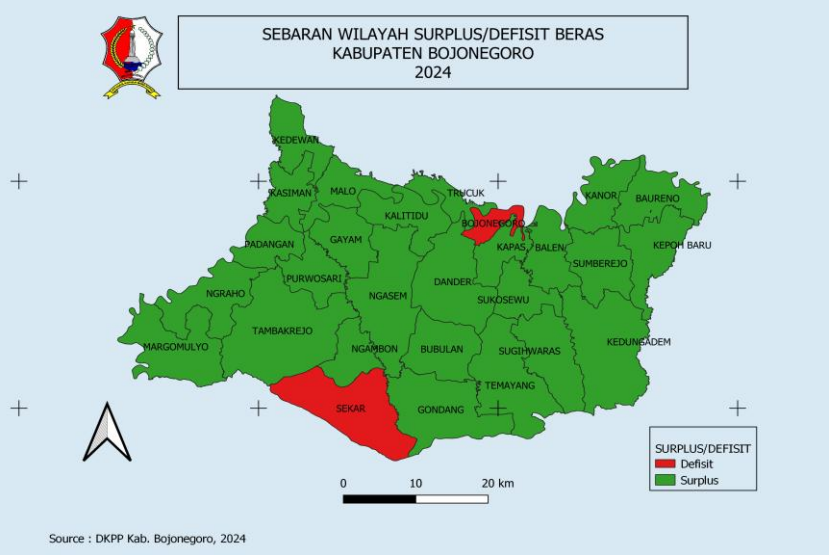
The rice balance is obtained by reducing the amount of rice availability with the amount of rice demand in each sub-district in Bojonegoro Regency or by using the Availability to Demand Ratio so that a surplus/deficit condition is obtained in each sub-district with the following results:

Table 6
Classification of A/D Ratio of Rice in Bojonegoro Regency in 2024

NO	KECAMATAN	A/D RATIO	KLASIFIKASI	NO	KECAMATAN	A/D RATIO	KLASIFIKASI
1	MARGOMULYO	1,47	Surplus	15	BALEN	4,18	Surplus
2	NGRAHO	4,07	Surplus	16	SUKOSEWU	5,84	Surplus
3	TAMBAKREJO	2,94	Surplus	17	KAPAS	4,76	Surplus
4	NGAMBON	1,86	Surplus	18	BOJONEGORO	0,79	Defisit
5	SEKAR	0,67	Defisit	19	TRUCUK	2,87	Surplus
6	BUBULAN	1,65	Surplus	20	DANDER	3,96	Surplus
7	GONDANG	2,58	Surplus	21	NGASEM	5,44	Surplus
8	TEMAYANG	2,81	Surplus	22	KALITIDU	14,20	Surplus
9	SUGIHWARAS	2,77	Surplus	23	GAYAM	3,70	Surplus
10	KEDUNGADEM	4,07	Surplus	24	MALO	5,42	Surplus
11	KEPOHBARU	5,69	Surplus	25	PURWOSARI	1,59	Surplus
12	BAURENO	3,24	Surplus	26	PADANGAN	3,56	Surplus
13	KANOR	5,65	Surplus	27	KASIMAN	4,82	Surplus
14	SUMBERREJO	5,34	Surplus	28	KEDEWAN	1,70	Surplus

Source: DKPP Bojonegoro, 2024

Furthermore, the distribution of rice surplus/deficit areas in Bojonegoro Regency can be shown in the following image:



Source: DKPP Bojonegoro, 2024

Figure 3. Distribution of Rice Surplus/Deficit Areas in Bojonegoro Regency in 2024

DISCUSSION

This study shows that of the 28 sub-districts in Bojonegoro Regency, 26 (92.86%) have a rice surplus, while 2 (7.14%) have a rice deficit. This reflects that Bojonegoro generally has a high production capacity to support local food security, particularly in terms of availability, as confirmed by FAO (2009) and Law No. 18 of 2012.

Although Bojonegoro Regency is classified as a surplus area, the analysis shows an imbalance in production distribution between sub-districts. Kalitidu District recorded the highest availability-to-

demand (A/D) ratio at 14.20, indicating a significant surplus, while Bojonegoro (0.79) and Sekar (0.67) districts were in deficit.

These findings support the spatial theory of food security proposed by Dewi et al. (2020), which states that surplus areas at the district level can mask inequalities and vulnerabilities at the sub-district level. This also reinforces the importance of a micro-scale approach to food distribution planning (Melkonyan et al., 2017).

This disparity in availability can be explained by two main factors: production capacity and population. Kalitidu, as the district with the highest harvested area and production yield, logically has a large surplus. Conversely, Bojonegoro District, the city center with limited agricultural land and a high population density, experiences a deficit. This aligns with a study by Suryana and Hermanto (2020) that found that population size and consumption pressure are determining factors in creating food deficits in non-productive areas.

This disparity between sub-districts highlights the importance of implementing regional food supply chain management. As explained by Chopra and Meindl (2016), efficient distribution planning must bridge surplus and deficit areas to maintain stable rice availability and prices. This strategy is further strengthened by the supply chain collaboration approach (Simatupang & Sridharan, 2005), which recommends coordination between producers, local governments, and distribution institutions.

Furthermore, in accordance with the National Food Agency guidelines (2023), areas with high surpluses such as Kalitidu can be used as a regional food reserve base, to support the needs of deficit and vulnerable areas.

*Availability-to-demand ratio*The (A/D) ratio used in this study proved to be an effective measure of local food security conditions. This ratio aligns with FAO literature and national food policy indicators and can be adopted in setting regional intervention priorities by the Food Security Agency and District Governments.

From a management science perspective, the findings of this study not only describe the condition of food security from a statistical perspective, but also provide a strategic basis for decision-making in managing public resources.

1. **Operational Management**
   The uneven distribution of rice between surplus and deficit sub-districts illustrates the need for increased efficiency in food logistics processes. This includes inventory management, logistics planning, and demand forecasting. The A/D ratio can be used as a key parameter in local government decision support systems (DSS) to efficiently and effectively manage food stock movements.
2. **Public Strategic Management**
   Based on Moore's (1995) Strategic Triangle approach, local governments can use the results of this research to create public value through equitable and sustainable food policies. Public legitimacy can be achieved by developing data-driven distribution policies. Operational capacity is enhanced by integrating information systems across sectors, while the authorizing environment is strengthened through synergy between regional and village organizations.
3. **Risk Management and System Resilience**
   Inequality in food distribution also represents a form of systemic risk in the supply chain. Therefore, local governments need to implement resilient supply chain principles, including diversifying supply sources, real-time monitoring of rice reserves, and strengthening responses to disasters or supply chain disruptions.

From the results of this research, the managerial and policy implications that can be implemented include:

a. The Bojonegoro Regency Government needs to develop an inter-district distribution system based on A/D ratio data.
b. Deficit districts such as Bojonegoro and Sekar require planned allocation of rice reserve distribution from surplus areas.
c. Mapping of data on availability and needs needs to be integrated into the regional food security information system dashboard.
d. Spatial planning and control of land conversionin deficit areas should be prioritized to avoid increasing external dependency.

CONCLUSION

Based on the analysis of rice availability and demand in Bojonegoro Regency in 2024, it was found that 92.86% of sub-districts were in surplus, while 7.14% were in deficit, namely Bojonegoro and Sekar Sub-districts. This imbalance reflects that although Bojonegoro is classified as a surplus area in aggregate, there is still an imbalance in distribution between regions. The availability-to-demand (A/D) ratio is an effective indicator in identifying local food security status and shows that food security is influenced not only by production but also by population, land management, and distribution efficiency. Therefore, policies are needed that support the optimization of surplus areas as food reserve centers and a rice distribution strategy that is responsive to deficit areas to maintain the stability of regional food security.

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