Evaluating Service Quality of Dairy Farmers' Cooperatives in Supporting Local Milk Producers Amid Declining Productivity

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ABSTRACT

Given recent productivity declines, this study aims to evaluate the quality of services provided by dairy farmers' cooperatives to local farmers, who are both cooperative members and the primary milk suppliers, in the context of declining milk productivity. A quantitative approach was employed, focusing on local farmers as key partners and milk suppliers within the livestock business district, a national livestock development model managed by dairy farmers' cooperatives. Data were collected from 49 respondents, consisting of 29 farmers from Livestock Business District I and 20 farmers from Livestock Business District II. The assessment began with measuring service quality attributes using a structured scale, followed by an Importance–Performance Analysis (IPA). The results indicate that service attributes are distributed across several IPA quadrants, with critical attributes requiring immediate attention, particularly water supply, milk pricing, and communication with cooperative management. In addition, several other service attributes were identified as needing improvement. These findings provide strategic insights for dairy farmers' cooperatives to enhance key service quality attributes that are essential for improving cooperative performance. Strengthening these attributes is expected to contribute to better service delivery and, ultimately, to increased milk productivity among local farmers, especially those operating within the livestock business district areas.

Keywords*: Dairy Farmers' Cooperatives, Importance-Performance Analysis, Service Attributes, Service Quality.*

INTRODUCTION

The Free Lunch Program (*Makan Bergizi Gratis*/MBG) represents a concrete effort by the Indonesian government to leverage its demographic dividend by emphasizing the importance of developing high-quality human resources (Aprillia & Azzahra, 2025). However, nutritional adequacy remains a significant challenge, as current intake levels in Indonesia still fall below established nutritional standards. Access to essential nutrients is also uneven, being limited to certain demographic groups, while a large proportion of the population continues to struggle to meet minimum nutritional requirements (Suprapto et al., 2025). To address this issue, milk has emerged as a viable alternative within nutrition fulfillment programs, given its complete nutritional profile, including specific nutrients unique to milk, such as essential amino acids. Furthermore, Pereira (2014) classifies milk as a nutrient-dense food capable of substituting regular meals to help meet societal nutritional needs.

Milk consumption in Indonesia has shown a consistent upward trend over time; however, domestic milk production has not kept pace with this growing demand, leaving local dairy farmers increasingly unable to meet national needs. The government has responded by implementing an import policy to address the supply deficit, with imports now accounting for over 80% of total national milk demand. Domestic fresh milk

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production gradually increased from 800,749 tons in 2014 to 951,004 tons in 2018, but stagnated and even declined in subsequent years, while total national demand rose sharply from 2.3 million tons in 2014 to around 4.4 million tons from 2021 onward. This persistent gap between supply and demand underscores Indonesia's reliance on imported milk and highlights the ongoing challenges for local dairy farmers in meeting the country's nutritional needs.

This policy was adopted due to the inability of local production to keep pace with the rising demand, which is projected to continue growing. Local producers face numerous challenges that have resulted in stagnant growth within the dairy industry. Import schemes implemented by previous administrations have been identified as contributing to the slow growth of local dairy production. To address these challenges, the government has promoted the implementation of cooperative management systems, which continue to be employed today. Cooperatives are considered the most suitable management approach due to their alignment with the characteristics of local farmers, who often face resource limitations (Wang et al., 2020; Iliopoulos & Valentinov, 2022). The collective framework prioritized by cooperatives is seen as a solution to the challenges faced by local dairy farmers (Cheng et al., 2025).

Evidence suggests that the management of local dairy production, which has relied on cooperative systems over the past few decades, has experienced stagnation, including low milk productivity. Implementing a robust system should yield higher performance and increase productivity among local dairy farmers (Yamori & Harimaya, 2022; Wahyuningtyas et al., 2022). Based on this argument, this study identifies a gap in the cooperative-based management of local dairy production, particularly in the relationship dynamics between cooperatives and their primary partners, the local dairy farmers. Consequently, evaluating the current cooperative management system is essential to uncover improvement issues. Ignoring such evaluations may risk short-term production stagnation and long-term production decline.

A situational assessment is necessary to evaluate the existing system and identify solutions for improving the productivity of local dairy farmers. Building on this premise, this study proposes the following research questions: to what extent does the quality of cooperative services support local milk production, and which aspects of service delivery require attention to facilitate the growth of local dairy farmers? This study aims to identify gaps in the cooperative management system involving local farmers as partners and primary suppliers of milk production. Furthermore, the study adopts the perspective of local farmers to assess the services provided by the dairy cooperative. To accommodate these objectives, the study focuses on the cooperative operating in the Livestock Business District (*Kawasan Usaha Ternak*/KUNAK) in Cibungbulang and Pamijahan sub-districts, Bogor Regency. These areas were chosen as they serve as a national model for dairy farming development, supported by integrated facilities. The study emphasizes the perception of services provided by cooperatives to local farmers as primary partners, employing a quantitative approach to analyze perceptions and satisfaction levels to gain a comprehensive understanding of the current cooperative management system. This study contributes to multiple stakeholders, with details elaborated in subsequent research sections.

LITERATURE REVIEW

Cooperatives

The cooperative business model emphasizes collective ownership, democratic governance, and member-centric objectives, addressing socio-economic challenges such as marginalization, trust deficits, food security, and community development (Candemir et al., 2021; Iliopoulos & Valentinov, 2022; Colombo et al., 2024). However, globalization has exposed cooperatives to weakened ownership structures and governance complexities (Ghauri et al., 2021). Cooperatives prioritize both economic and non-financial goals, operating under principles such as non-transferable shares, democratic decision-making, and user-centered benefits (Billiet et al., 2021). Theoretical frameworks, including

transaction cost economics and negotiation theory, provide insights into collective decision-making and shared benefits while highlighting challenges related to member diversity and ownership rights.

Key cooperative principles in Indonesia, such as voluntary membership, democratic management, equitable surplus distribution, and independence, enable cooperatives to prioritize social outcomes such as job stability, fair contracts, and community welfare, while demonstrating greater resilience during crises. Cooperatives benefit from member insights, member-funded capital, and a culture of mutual assistance, contributing to economic sustainability and equitable development (Castilla & Sánchez, 2020). Their impacts vary by sector: cooperative-based financial institutions outperform traditional banks, and cooperatives reduce poverty by providing resources and credit despite political challenges (Yamori & Harimaya, 2022). In Indonesia, digital orientation, government support, and leveraging social capital enhance competitiveness, transparency, collaboration, and long-term sustainability of rural cooperatives (Wahyuningtyas et al., 2022; Wulandhari et al., 2022).

Despite their advantages, cooperatives face challenges, including governance complexities, limited technology adoption, and member diversity (Sambuo, 2023). Scholars advocate for innovative education and management frameworks to enhance cooperatives' adaptability and sustainability, introducing concepts like "co-operatology" to address persistent challenges (Benavides & Ehrenhard, 2021). With collective ownership and democratic governance, cooperatives are pivotal in addressing socio-economic challenges. While the cooperative model demonstrates resilience and adaptability, continuous innovation and strategic development are essential to maintain competitiveness and relevance in contemporary economic systems.

Service Quality

The service quality model is one of the most established frameworks for evaluating service quality, primarily focusing on the gap between customer expectations and perceived performance (Stević et al., 2021; Sujana & Yusni, 2024). It examines five dimensions: tangibles, reliability, responsiveness, assurance, and empathy, offering a structured approach to identify areas requiring improvement. Originally designed as a process-oriented tool, the model has evolved to be applied across diverse industries and service contexts, demonstrating its flexibility and adaptability (Yang et al., 2020).

In practice, the model has been widely used to analyze service quality and guide enhancements. For example, Goula et al. (2021) applied it in healthcare services, revealing significant gaps in communication, responsiveness, and physical infrastructure, which informed actionable improvements. Similarly, Bichler et al. (2020) emphasized how reliability and attentiveness strongly affect customer satisfaction and revisit intentions, while Sumi and Kabir (2021) highlighted the importance of assurance and empathy in promoting educational satisfaction and loyalty. Chonsalasin et al. (2021) extended the model to public services, showing that accessibility, safety, and clear wayfinding are critical dimensions of user expectations. The service quality model has also been used in organizational and digital contexts. Utama et al. (2024) demonstrated its role in building strategic alliances in public services, while Syah and Olivia (2022) confirmed that electronic service quality affects customer satisfaction and value co-creation. The model remains a versatile and practical framework for assessing service quality, offering both theoretical insights and actionable guidance for continuous improvement across industries.

Perceived Quality

Perceived quality is a cornerstone in consumer behavior, reflecting consumers' evaluation of a product's or service's overall excellence (Snoj et al., 2004). It encompasses both tangible and intangible attributes, influencing purchase decisions and trust (Christopher et al., 2002; Wang et al., 2020). This evaluative construct is shaped by relational dynamics, as technological advancements allow competitors to replicate

product quality (Samudro et al., 2018). Xie and Sun (2021) highlight the "zone of indifference," where minor differences between expected and perceived quality do not trigger strong consumer responses. The dual nature of perceived quality, subjective yet evaluative, makes it a critical factor in marketing and consumer studies, emphasizing the importance of aligning products and services with customer expectations to maintain satisfaction, loyalty, and competitive advantage (Lupiyoadi, 2018).

Perceived quality is a key factor across sectors, influencing consumer preferences and loyalty. Glogoveţean et al. (2022) note that extrinsic attributes such as branding, labeling, and authenticity, along with demographic factors, shape perceptions. Mainardes and Freitas (2023) found that satisfaction and competence drive loyalty in traditional services, while reliability is crucial in digital services, highlighting sector-specific drivers. Rajendran (2018) emphasizes that perceived quality affects loyalty both directly and indirectly through satisfaction, and Ardisa et al. (2022) identify it as a mediator between ethnocentrism and purchase intentions. These studies demonstrate that enhancing perceived quality aligns products and services with consumer expectations, optimizing satisfaction, loyalty, and competitive positioning.

Importance-Performance Analysis (IPA)

The Importance-Performance Analysis (IPA) is a widely used tool for evaluating the performance of attributes relative to their importance, guiding strategic decision-making across industries. IPA helps organizations prioritize improvements, especially when resources are limited. Feng et al. (2014) describe IPA as a two-dimensional grid plotting attribute importance against performance, offering guidance for resource allocation and service enhancement. Shen et al. (2024) note that IPA, initially developed for automotive customer satisfaction studies, now incorporates diverse data sources, including online reviews and maintenance records, integrating subjective and objective insights.

IPA has been applied in multiple contexts. Gambelli et al. (2021) used it to identify critical business performance indicators and improve economic sustainability. Chen et al. (2021) applied IPA to assess sustainable forest management, revealing performance gaps between indigenous and non-indigenous populations. Marasinghe et al. (2021) evaluated visitor satisfaction, highlighting gaps in cleanliness, safety, and interpretive content to guide tourism improvements. Similarly, Sanny et al. (2021) assessed firm performance to identify key technical requirements for customer satisfaction and competitiveness. IPA proves to be a versatile and robust framework, enabling organizations and policymakers to allocate resources strategically, enhance service quality, and support sustainable development. Its adaptability across industries underscores its enduring relevance for addressing contemporary challenges in performance evaluation and strategic planning.

Based on field observations and literature, the study was carried out in phases. Its theoretical underpinnings were service quality and perceived quality, with an emphasis on discrepancies between users' views and set service standards. To find factors pertinent to the study, fieldwork was done. In order to identify appropriate indicators for the case study, the research model was further improved through additional field research. The last field research evaluated service quality and determined what needed to be improved. Figure 1 depicts the comprehensive research framework.

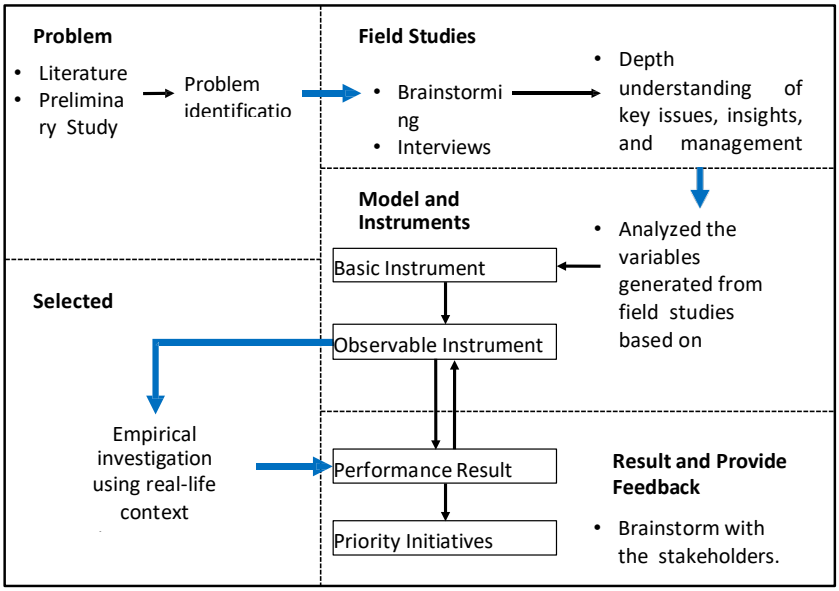

Figure 1. Research Framework

RESEARCH METHODS

This study involved a series of stages designed to examine the service quality provided by KPS Bogor. The selection of Dairy Farmers' Cooperatives (*Koperasi Peternak Sapi*/KPS) Bogorwas based on the firm's situational context and the accessibility of the study, including openness to information, access to data, and ease of location. An initial study was conducted through discussions with KPS Bogor to facilitate this research. The study aimed to clarify its objectives, identify key stakeholders, and pinpoint underlying issues. In-depth discussions with KPS management helped determine critical issues while considering their interests. Information on relevant variables and sub-variables was collected to develop research instruments for the quantitative study. The final instrument included 25 indicators across five service quality dimensions: tangibles (technology use, clean water provision, medical assistance, transportation feasibility, artificial insemination, management appearance, meeting rooms, and office availability), reliability (milk pricing, income distribution, feed delivery, and problem-solving by the medical team), responsiveness (information dissemination, patrol scheduling, service responsiveness, and complaint management), assurance (periodic meetings, transparency, leadership interactions, and management attitude), and empathy (familiarity with members, direct visits, availability of service time, and understanding member needs).

The instrument was initially tested to improve data quality, reduce potential biases, and ensure respondent comprehension. The quantitative study was then conducted through direct visits to KUNAK members, with assistance provided during data collection to ensure accurate and complete responses. This study used purposive sampling to evaluate the service quality of dairy cooperatives from the perspective of local dairy farmers. The population of 96 members in KUNAK (57 in KUNAK I, 39 in KUNAK II) yielded a representative sample of 49 respondents using the Slovin formula at a 10% margin of error. The sample was proportionally distributed: 29 from KUNAK I and 20 from KUNAK II. Data collection involved direct assistance to respondents.

A sequential mixed-methods approach was applied, starting with quantitative analysis using structured questionnaires analyzed in SPSS for validity and reliability, followed by descriptive analysis. The IPA framework identified perceptions of service satisfaction (Creswell, 2009; Mamakou et al., 2024). Variables were considered valid if r-values exceeded the critical r (0.2826, significance 10%). Reliability was assessed using Cronbach's Alpha, with a coefficient above 0.6 indicating acceptable reliability. The IPA

approach measured members' perceptions of service attribute importance and performance using a 1–5 Likert scale. Average importance and performance scores were plotted on a Cartesian diagram, with performance on the X-axis and importance on the Y-axis.

$$\bar{X}i = \frac{\Sigma Xi}{n}$$
$$\bar{Y}i = \frac{\Sigma Yi}{n}$$

Description :
Xi = The average score of the service performance level for each attribute
Yi = The average score of the importance for each attribute
Xi = The total score of the service performance level of the respondents
Yi = The total score of the importance of the respondents
i = 1,2,3……k
k = The number of cooperative service attributes
n = The number of respondents

The Cartesian diagram visualizes the relationship between service importance and performance, supporting analysis and strategic decision-making. It categorizes attributes into four quadrants: Quadrant 1 – Main Priority: important but underperformed, requiring improvement; Quadrant 2 – Maintain Performance: important and well-delivered, should be sustained; Quadrant 3 – Low Priority: less important with minimal benefit; Quadrant 4 – Excessive: less important but overemphasized, allowing resource reduction.

The Customer Satisfaction Index (CSI) is used to assess the satisfaction of consumers or members regarding the service attributes provided. Satisfaction is measured based on the variables of importance and performance through several stages (Hohenberg & Taylor, 2022): calculating the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS), determining the Weight Factor (WF) and Weighted Score (WS), and finally computing the overall CSI. Table 1 summarizes the step-by-step procedure for calculating the CSI.

Table 1. CSI Calculation Framework

Steps	**Formula**
1) Calculating MIS and MSS n: Number of respondents Xi: The value of the attribute satisfaction to i Yi: The value of the attribute importance to i	$MIS = \frac{\sum^{n} 1\, Yi}{n}$ $MSS = \frac{\sum^{n} 1\, Xi}{n}$
2) Calculating WF p = Number of service attributes i = Attribute of cooperative service to i	$WFi = \frac{MISi}{\sum_{i=1}^{p} MISi}$
3) Calculating WS i = Attribute of cooperative service to i	$WSi = WFi \times MSSi$
4) Calculating CSI WSi = WS on the service attribute to i	$CSI = \frac{\sum^{p} WSi}{i=1} \times 100\%$ 5
5) Determining Scale Range SR = Scale range, m = highest score n = lowest score, b = number of categories created, which is classified as, <20% Strongly Dissatisfied 20% - 40% Dissatisfied 41% - 60% Somewhat Satisfied 61% - 80% Satisfied >80% Strongly Satisfied	$SR = \frac{m - n}{b}$ $SR = \frac{100\% - 0\%}{5}$

RESULTS

The results of the investigation are presented in a series of sections. In order to select appropriate measuring tools, the first step was to assess the instruments' validity and reliability. The project then moved forward with service mapping and service quality assessments, which are covered in more detail in the sections that follow. The instruments employed in this study underwent validity and reliability evaluations. These assessments used statistical methods to assess several aspects of the services that KPS Bogor offered dairy producers in KUNAK. As seen in Table 2, the findings showed that 17 of the 25 suggested qualities were legitimate. Because the remaining properties did not match the necessary threshold values, they were declared invalid.

Table 2. Validity Test

Attribute Code	Importance	Performance	Result
A1	0.415	0.567	Valid
A2	0.570	0.774	Valid
A3	0.609	0.305	Valid
A4	0.088	-	Invalid
A5	0.566	0.328	Valid
A6	0.370	0.410	Valid
A7	0.253	-	Invalid
A8	-	0.216	Invalid
B1	0.308	0.461	Valid
B2	-	0.121	Invalid
B3	0.333	0.477	Valid
B4	-	0.131	Invalid
B5	0.680	0.343	Valid
C1	0.391	0.476	Valid
C2	0.404	0.321	Valid
C3	0.524	0.362	Valid
C4	0.472	0.624	Valid
D1	-	0.051	Invalid
D2	0.613	0.377	Valid
D3	0.459	0.386	Valid
D4	0.417	0.359	Valid
E1	-0.099	-	Invalid
E2	0.236	-	Invalid
E3	0.541	0.375	Valid
E4	0.496	0.601	Valid

The milk truck's practicality, meeting room appropriateness, management's acquaintance with members, and management's frequency of field visits were among the criteria that were judged invalid based on the degree of importance. In the meantime, the building's viability, income distribution, the medical team's competence, the medical team's problem-solving skills, and the regularity of meetings were the invalid attributes based on the performance level. Different perspectives on the significance of these services and performance levels at the same time are probably responsible for the validity problems. Consequently, these characteristics were not used in additional analysis and were not included in the study.

Table 3. Reliability Test

Service Attributes	Cronbach's Alpha Importance	Cronbach's Alpha Performance
A1	0.415	0.567
A2	0.570	0.774
A3	0.609	0.305
A5	0.566	0.328
A6	0.370	0.410
B1	0.308	0.461
B3	0.333	0.477
B5	0.680	0.343
C1	0.391	0.476

Service Attributes	Cronbach's Alpha Importance	Cronbach's Alpha Performance
C2	0.404	0.321
C3	0.524	0.362
C4	0.472	0.624
D2	0.613	0.377
D3	0.459	0.386
D4	0.417	0.359
E3	0.541	0.375
E4	0.496	0.601

The dependability test results for the dairy farmers' cooperatives' service qualities are displayed in Table 3. Cronbach's alpha varies from 0.305 to 0.774 for performance and from 0.308 to 0.680 for importance. These numbers reveal that while some qualities exhibit comparatively poorer reliability, others have moderate internal consistency. Higher reliability in terms of relevance and performance is demonstrated by attributes like A2 and B5. All things considered, the findings offer a foundation for assessing how consistently respondents perceive various aspects of the service.

Table 4. Service Attribute Mapping

Service Attributes	Importance (Y)	Performance (X)
A1	4.71	3.97
A2	4.91	1.40
A3	4.79	3.46
A5	4.81	3.65
A6	3.02	3.10
B1	4.77	2.63
B3	3.81	3.18
B5	4.38	3.69
C1	4.77	3.28
C2	4.61	3.44
C3	4.30	3.24
C4	4.28	3.20
D2	4.63	3.73
D3	4.18	3.00
D4	3.93	3.83
E3	4.10	3.08
E4	4.08	3.06
Average Score	4.35	3.29

The mapping of member perceptions aims to evaluate and enhance the service performance of KPS Bogor, as illustrated in Figure 2. This mapping is represented through a Cartesian diagram divided into four quadrants. The average values were used as thresholds to delineate the quadrants within the diagram. The calculations yielded an X-axis value of 3.29 and a Y-axis value of 4.35, as shown in Table 4. Each quadrant represents service attributes based on the respondents' perceptions of the importance and performance levels of services provided by KPS Bogor. This mapping assists the cooperative in evaluating its current service performance and formulating strategies to determine improvement efforts, ultimately maximizing its performance.

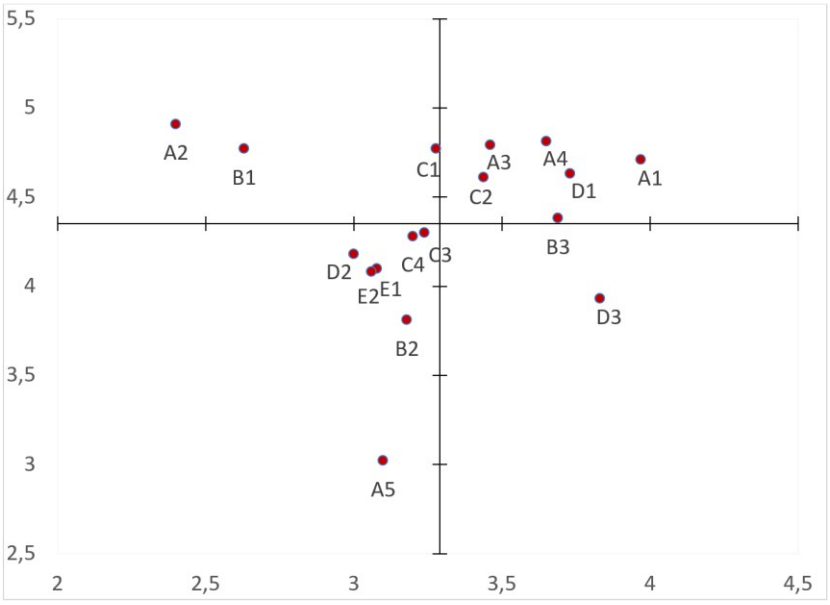

Figure 2. Visualization of the Importance and Performance of KPS Bogor

Quadrant I represents attributes with high importance but low performance. The attributes in this quadrant include the provision of clean water (A2), milk pricing (B1), and the communication skills of cooperative managers (C1). Attribute A2 has an importance score of 4.91 and a performance score of 1.40. This relates to providing clean water for drinking and livestock sanitation, including cleaning animal pens. Members reported that the poor performance is mainly due to an unstable water supply caused by blockages from accumulated debris. Additionally, water is often diverted by non-KUNAK residents for irrigation, and cooperative managers rarely inspect the water service, which further exacerbates the problem. Attribute B1, with an importance score of 4.77 and a performance score of 2.63, concerns the low purchase price of milk offered to KUNAK members. Most milk (over 80%) is sold to the industry, but the prices received are lower than expected and even below what middlemen offer. Members expressed the need for higher milk prices to cover production costs and improve farmers' welfare.

The third attribute is the management's ability to provide information about cooperative programs (C1), with an average importance score of 4.77 and a performance score of 3.28. Cooperative programs are vital for members as they influence the cooperative's performance and development. However, program-related information has not reached all members equally. Group leaders often fail to relay information effectively to their groups, partly due to members' lack of awareness about the importance of information dissemination. According to Parasuraman et al. (1988), the quality of cooperative services depends on the organization's ability to deliver information quickly and accurately.

Quadrant II includes attributes with both high importance and high performance. This quadrant comprises six attributes, the first being cooling technology to maintain milk freshness (A1), which has an average importance score of 4.71 and a performance score of 3.97. The cooling technology effectively preserves the quality of cooperative milk for distribution to industries and end consumers. Other attributes in this quadrant include medical services, such as the availability of medicine (A3), artificial insemination services (A4), and the medical team's ability to meet KUNAK patrol schedules (C2). The high performance of these attributes is attributed to an adequate ratio of medical staff and their effective work in serving KUNAK members.

The fifth attribute is the recording of milk sales for receipts (B3), which has an average importance score of 4.38 and a performance score of 3.69. Sales are recorded daily, and monthly receipts are reviewed by cooperative management. The final attribute is transparency in financial reporting (D1). The cooperative holds annual meetings attended

by all management, during which members receive updates on operational and financial reports. This attribute meets members' expectations, and the cooperative should maintain its current performance to prevent decline. However, there is still room for improvement in these services.

Attributes in this quadrant are characterized by both low importance and low performance. The first attribute is feed delivery (B2), with an average importance score of 3.81 and a performance score of 3.18. Members noted that feed deliveries often only reach the warehouse rather than being delivered directly to the barns. The second attribute is the medical team's ability to respond to member needs (C3), with an importance score of 4.30 and a performance score of 3.24. Members reported inconsistencies in the medical team's responses, particularly for urgent animal healthcare services that are difficult to access.

The third attribute is the management's ability to respond to member complaints (C4), with an importance score of 4.28 and a performance score of 3.29. Low performance in this area is attributed to a lack of management attention. Other attributes in this quadrant include routine group meetings (D2), which scored an average importance of 4.18 and a performance of 3.00. Meetings are rarely held due to scheduling conflicts, resulting in ineffective communication and cooperation within the group.

Additional attributes include the availability of service time (E1) and understanding of member needs (E2). Both are considered low in importance, as the medical team's presence in the field and the infrequent group meetings compensate for management's shortcomings. The final attribute, cooperative management's appearance (A5), was also considered unimportant by members, despite being rated below average. Quadrant IV includes service attributes with low importance but high performance. The only attribute in this quadrant is management's attitude toward members (D3). The calculation indicates the lowest importance score of 3.02, while the performance score is 3.10. This score suggests that management maintains a good attitude, with no reported issues between members and management. Additionally, management has consistently demonstrated professionalism during meetings involving members.

Table 5. Customer Satisfaction Index

Service Attributes	**MIS**	**WFi**	**MSS**	**WS**
A1	4.714	0.063	3.979	0.253
A2	4.918	0.066	2.408	0.159
A3	4.795	0.064	3.469	0.224
A5	4.816	0.065	3.653	0.237
A6	3.020	0.040	3.102	0.126
B1	4.775	0.064	2.632	0.169
B3	3.816	0.051	3.183	0.164
B5	4.387	0.059	3.693	0.218
C1	4.775	0.064	3.285	0.211
C2	4.612	0.062	3.448	0.214
C3	4.306	0.058	3.244	0.188
C4	4.285	0.057	3.204	0.185
D2	4.632	0.062	3.734	0.233
D3	4.183	0.056	3.000	0.169
D4	3.938	0.053	3.836	0.203
E3	4.102	0.054	3.081	0.167
E4	4.081	0.055	3.061	0.168
Total MIS			74.081	
Total CSI			65.9%	

With a score of 65.9%, the results demonstrate that the perception of service satisfaction is within the "satisfactory" category (Table 5). Although this score falls between 61 and 80%, it is on the lower end of the "satisfactory" group, indicating the possibility of a drop in satisfaction if changes are not implemented. Despite the fact that the current score is satisfactory, these results highlight the need for improvements in service performance.

DISCUSSION

This study categorized cooperative service attributes into four quadrants, mapped into three focus areas: priority, maintain, and non-priority. Quadrant I includes highly important but underperforming attributes requiring immediate attention, as neglecting them could harm the performance and reputation of dairy farmers' cooperatives in Bogor (Bichler et al., 2020; Stević et al., 2021). Key priorities include water services, which face frequent disruptions from non-KUNAK residents and clogged channels, requiring regular monitoring and proactive measures. Other priority attributes are fair milk pricing and effective information dissemination. To address pricing gaps, the cooperative should engage with existing markets and explore new ones offering higher prices (Billiet et al., 2021). For information dissemination, training management staff who directly interact with members will enhance communication and benefit stakeholders (Sambuo, 2023).

Improving dairy farmers' cooperatives' performance requires the participation of both management and members, with an emphasis on governance (Ghauri et al., 2021; Iliopoulos & Valentinov, 2022). Inclusive participation ensures effective system improvements and addresses governance gaps, which need clear member roles, regulations, and interactions. Prompt action is essential to achieve the cooperative's vision of enhancing member welfare. Additionally, areas already performing well, such as medical services, should be maintained and enhanced by allocating three medical teams for better coverage and providing regular training to sustain knowledge and skills (Xie & Sun, 2021).

Next is using fresh milk technology, such as milking machines, which can help boost farmer productivity. Since such technologies require significant investments, cooperative management could consider applying for funding support or offering flexible payment schemes. Another area to maintain is financial transparency, which influences member trust and engagement and ultimately impacts organizational performance (Candemir et al., 2021). Every service attribute contributes to performance improvements; ideally, all services should be enhanced. However, recognizing resource constraints, the cooperative should strategically address service quality challenges. Focusing on Quadrants I and II will yield the most significant impact on service performance, with most resources allocated accordingly (Chen et al., 2021; Marasinghe et al., 2021). If additional resources are available, they can be directed toward other quadrants. Addressing service performance challenges requires strategic planning to deliver substantial results for the organization. The allocation of firm resources will be a determining factor in KPS Bogor's future performance.

In contrast to the importance-performance matrix, satisfaction assessment aims to evaluate the service quality provided to its members. Service satisfaction among cooperative members is generally within a satisfactory range, as reported by Snoj et al. (2004) and Wang et al. (2020), although the index slightly exceeds the threshold, as noted by Hohenberg and Taylor (2022). These data suggest that cooperative services have significant potential for improvement. The ratings provided by members indicate that the services currently meet their expectations. This highlights the necessity for KPS Bogor to enhance service quality. The cooperative must create a game plan to improve this index by utilizing an importance-performance map focusing on priority problem areas. However, the cooperative may also enhance performance in other quadrant groups that remain open for improvement. The cooperative must consider its capacity to pursue effective and significant improvements in certain services.

The study contributes to service quality management literature in agricultural cooperatives by showing the effective application of the importance-performance matrix in practice. It demonstrates how service attributes, member satisfaction, and organizational performance interact, providing empirical support for prioritization strategies. The findings also extend theories on cooperative governance and resource allocation, emphasizing the critical role of management and member participation, and highlighting the integration of practical assessment tools with theoretical frameworks to inform decision-making in agribusiness.

CONCLUSION

This study provides critical insights into the current situation of dairy farmers' cooperatives, highlighting areas requiring immediate attention. Using the IPA approach, several service attributes were identified as critical but underperforming in Quadrant I, including water services, fair milk pricing, and management's ability to communicate cooperative program information. Quadrant II includes six attributes with satisfactory performance, while Quadrant III comprises seven attributes with low importance and low performance. Quadrant IV highlights attributes with low importance but high performance. The CSI analysis indicates a score of 65.9%, suggesting that dairy farmers' cooperatives' services remain satisfactory. However, this level of satisfaction requires follow-up, particularly for Quadrants I and II, as these attributes are essential yet underperforming and slightly above the threshold, making them prone to decline.

The findings imply that cooperative management should evaluate all service attributes through regular reviews, such as annual assessments, followed by corrective actions to foster continuous improvement and enhance dairy productivity. Training or counseling on feed management and effective farming practices is recommended to support members in optimizing operations. Direct communication between management and members is also crucial to establishing mutual understanding and collaborative channels.

This study has limitations. As dairy farmers' cooperatives Bogor was the case study, findings may not generalize to other locations due to contextual differences. Perception biases between members and service standards may exist, highlighting the need to align perceptions with established benchmarks. Additionally, the study relied on numerical data, which may not fully capture individual variations in perception. Future research should explore factors influencing member satisfaction and loyalty and uncover hidden aspects that can enhance productivity and overall cooperative success. By addressing these implications, dairy farmers' cooperatives can improve service quality, operational efficiency, and member satisfaction comprehensively.

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