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A Comprehensive Swot Analysis of Jaringan Gas (Jargas) Expansion for Household and Small-Customer Segments: Evidence from PT Perusahaan Gas Negara (PGN) Tbk, Semarang Area

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Abstract

This study aims to analyze the expansion strategy of the natural gas network (Jargas) for the household and small-customer segments implemented by PT Perusahaan Gas Negara (PGN) Tbk, Semarang Area, using the SWOT analysis method. The Jargas program represents a strategic form of business expansion that supports national energy efficiency and reduces dependence on LPG. This research employs a qualitative descriptive approach with data collection techniques comprising observation, Focus Group Discussion (FGD), and documentation. The findings indicate that PGN possesses several strengths, including a stable gas supply, competitive pricing, and the availability of a responsive operational support team. However, key weaknesses include the mandatory collection of customer interest, also referred to as the gas subscription request form or Formulir Registrasi Berlangganan Gas (FRGB) prior to construction, as well as reliance on the presence of anchor industries. Opportunities that can be leveraged include collaboration with local vendors, expansion into new areas, and high public interest in alternative energy. Meanwhile, threats faced by the company include the dominance of subsidized LPG 3 kg, limited pipeline infrastructure, and potential competitors. By understanding these factors, PGN can formulate more targeted, adaptive, and efficient expansion strategies to enhance the coverage of natural gas services for communities in the Semarang region.

Keywords: SWOT Analysis, Jaringan Gas (Jargas), Expansion

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INTRODUCTION

Expansion is an essential strategy for companies to develop their business, both in terms of production capacity and market reach. According to Maulidya (2023), expansion is used by companies to enhance competitiveness and broaden existing market opportunities. One form of expansion undertaken by PT PGN is the development of the natural gas distribution network, known as Jaringan Gas (Jargas). PGN offers two types of products, namely Jargas for households and Jargas for industrial consumers. The Jargas program aims to reduce public dependence on conventional fuels such as LPG while improving the efficiency of environmentally friendly energy use. Through the Jargas program, it is expected that communities can obtain a more stable and affordable energy supply,

thereby supporting the achievement of the national energy mix target. The government has also continued to promote the utilization of natural gas among the public, one of which is through the development of Jargas for household use (Ministry of Energy and Mineral Resources, 2023).

For the household and small-customer segments in the Semarang area, Jargas is managed by PT PGN Semarang Area. Based on observations conducted at PT PGN Semarang Area, several challenges were identified in the process of expanding the household gas network. Although the Jargas program holds strong potential in providing a more efficient and affordable alternative energy source, operational obstacles remain in the field, such as the uneven availability of pipeline infrastructure across regions. In addition, public awareness and understanding regarding the benefits of natural gas usage remain relatively low. During the expansion process, the company must also contend with various external barriers, including geographical and technical factors that affect the speed of network development.

Preliminary interviews with internal staff at PT PGN Semarang Area revealed several key issues that hinder the equitable distribution of Jargas for the household segment in the Semarang region. The primary challenge is the absence of main pipelines in many areas, which results in high capital expenditure (capex) requirements for infrastructure development. As a result, PGN focuses on areas that are already equipped with network infrastructure. Although public responses to the Jargas program are generally positive due to its practicality and competitive pricing compared to non-subsidized LPG (Liquified Petroleum Gas), public understanding of its benefits must continue to be increased through sustained outreach and education efforts. PT PGN Semarang Area also provides a 24-hour Tim Penanganan Gangguan (TPG), which ensures customer comfort and safety in using natural gas.

Based on initial observations and interviews, it can be concluded that Jargas for the household and small-customer segments holds substantial potential for increasing customer numbers in the City of Semarang. Therefore, a well-designed strategy is required to accelerate the growth of Jargas customers in these segments. One commonly used method for formulating strategy within a company is SWOT analysis. SWOT analysis involves the systematic identification of various factors to formulate organizational strategies (Rangkuti, 2020). Through this analysis, companies can maximize their strengths and opportunities while minimizing weaknesses and threats. SWOT analysis helps identify the company's internal strengths in leveraging market opportunities, as well as approaches to overcoming weaknesses and threats that may arise during expansion (Friesner, 2010). The primary objective of this study is to formulate expansion strategies for PT PGN Semarang Area by identifying the strengths, opportunities, weaknesses, and threats associated with Jargas for the household and small-customer segments in Semarang.

LITERATURE REVIEW AND HYPOTHESES

SWOT Analysis

SWOT analysis is a strategic planning method that enables organizations to identify their internal strengths and weaknesses, as well as external opportunities and threats (Phadermrod et al., 2019). According to Nazarudin (2020), SWOT analysis is a strategic planning technique used to assess various factors that influence the achievement of organizational goals, both in the short and long term. Based on the views of Pearce and Robinson (2008), SWOT analysis consists of four key elements, which are explained as follows:

1. Strengths
   Strengths refer to resources or capabilities possessed or utilized by a company that provide competitive advantages in meeting consumer needs. These strengths typically originate from the assets and expertise available within the organization.
2. Weaknesses
   Weaknesses refer to limitations or shortcomings in a company's resources or capabilities compared to competitors, which may hinder its ability to serve customers optimally.

3. Opportunities
   Opportunities represent external conditions that may provide benefits for the company. These opportunities can arise from market trends, untapped customer segments, shifts in competition, regulatory changes, technological advancements, or improved relationships with business partners such as buyers and suppliers.
4. Threats
   Threats are external factors that could potentially harm the company. Conditions such as the emergence of new competitors, slowing market growth, increased bargaining power of customers or suppliers, technological changes, and new regulations may pose challenges to the achievement of organizational goals.

SWOT analysis is widely used by companies because it offers several benefits. It helps organizations determine suitable strategies, evaluate ongoing strategies, and formulate alternative strategies for specific situations. SWOT analysis integrates the four elements—strengths, weaknesses, opportunities, and threats—into a unified framework, enabling the development of strategic solutions relevant to the issues under study.

1. Internal Factor Analysis Strategy (IFAS)
   The IFAS matrix is used to identify internal factors that influence a company, particularly strengths and major weaknesses. According to Parrangan (2021), information related to internal aspects can be derived from various organizational functions, such as management, information systems, finance, human resources, marketing, and production. The matrix functions as a tool to evaluate and connect different functional business aspects. IFAS includes five primary columns: factors, weight, rating, score, and comments. Each factor reflects relevant internal elements that represent the company's condition. As noted by Parrangan (2021), internal factors originate from various functional areas, including marketing, human resources, production, finance, and management information systems.
2. External Factor Analysis Strategy (EFAS)
   EFAS is used to evaluate external factors affecting a company. According to Hunger (2003), the EFAS matrix allows strategic managers to identify elements from both the external environment and the work environment before taking strategic actions. The EFAS matrix also consists of five main components: factors, weight, rating, score, and comments. Each factor captures external conditions relevant to the company's situation. Parrangan (2015) notes that EFAS gathers external data for analysis, focusing on major factors such as competitive threats, buyer bargaining power, economic conditions (including growth, exchange rate fluctuations, and government policy), and technological developments. The analysis emphasizes external factors with significant potential to disrupt or influence company operations, while other external conditions are considered stable and taken as given.
3. SWOT Matrix
   David (2006) states that the SWOT matrix is a tool used to match various company factors and assist strategic managers in formulating four types of strategies: SO (strength–opportunity), WO (weakness–opportunity), ST (strength–threat), and WT (weakness–threat).

Business Expansion

Increasing business competition requires companies to continuously develop strategies capable of maintaining their competitive position. Without expansion, companies risk falling behind competitors that aggressively develop markets and production capacity. Expansion is a strategic managerial action aimed at widening the business scope while ensuring long-term operational sustainability (Esterlina & Firdausi, 2021). Husnan & Pudjiastuti (2006) explain that expansion represents a form of business growth achieved by increasing capital and production capacity through additional business units that fulfill different production needs or through acquisitions and mergers with other companies. The goal is to increase economic activity and broaden the corporate sector.

Such economic development is often characterized by rising costs of goods and services, increased money circulation, higher production output, and increased consumer expenditure. Nitisemito (2006) similarly defines expansion as a company's strategy to enlarge production capacity and broaden its market coverage, primarily driven by the firm's ability to offer high-quality products and services.

Energy Distribution Network / Jaringan Gas (Jargas)

The development of renewable energy has become an essential component of Indonesia's National Energy Policy, which includes national energy mix targets (Zulaihah et al., 2021). One prioritized solution is the utilization of natural gas, considered a cleaner and more environmentally friendly primary energy source (Andriawan et al., 2020). Although Indonesia's natural gas exports—both LNG (Liquefied Natural Gas) and pipeline gas—remain dominant, domestic utilization continues to expand, including its use as feedstock for fertilizer, steel, electricity generation, and petrochemical industries (Kurniaty & Hermansyah, 2016). Natural gas, known as "green energy," is projected to contribute at least 22% to the national energy mix to support economic growth. To achieve this target, the government has set a goal of developing approximately 10 million city gas connections by 2025 (Ristawati et al., 2023).

As part of its support for the national energy mix target, PT PGN Semarang Area offers several natural gas distribution products tailored to customer needs (PGN, 2024). Specifically, PT PGN Semarang Area has implemented the following core products suited to its customer characteristics (PGN, 2024):

1. Gaskita: the most widely used service, supporting households and small businesses. Jargas has been built in districts such as Tembalang and Banyumanik, providing safe, efficient, and environmentally friendly energy access.
2. Sinergi: catering to commercial and small–medium industries—restaurants, laundries, and food–beverage businesses—by ensuring stable gas availability.
3. Gasku and Gaslink: less prominent in Semarang due to the region's already extensive pipeline network coverage; distribution thus focuses primarily on direct pipeline systems.

Through these services, PT PGN Semarang Area actively supports the expansion of clean energy access and contributes to the government's city gas connection development targets. Government support for natural gas as a key component of energy sustainability includes the improvement of supporting infrastructure, such as city gas systems (Guchany, 2020). Jargas for households involves supplying natural gas through installed pipeline networks for distribution to residential customers.

METHODS

Data collection in this study employed a qualitative descriptive method, which aims to describe actual conditions in depth in accordance with the research focus. According to Sugiyono (2019), qualitative methods are used to examine natural conditions of an object, where the researcher serves as the primary instrument and data collection techniques are conducted through triangulation (combined methods). In qualitative research, data may be collected through observation, FGD (Focus Group Discussion), and documentation (Rahardjo, 2011).

1. Observation

   Observation was carried out by utilizing the senses—such as sight, hearing, and smell—to gather the information needed to answer the research questions. The data obtained through observation include activities, events, objects, specific situations, and even emotional expressions. The purpose of this observation was to obtain a real understanding of events relevant to the research questions. Direct observations were conducted at the Sales and Operation Division of PT PGN Semarang Area, as well as during socialization activities in several districts within the City of Semarang.
2. Focus Group Discussion (FGD)

Data collection through FGD involved a structured group discussion designed to explore the meaning of an issue by engaging a group of participants, ensuring that the resulting interpretation is not biased. This study utilized a Mini Focus Group due to the small number of relevant informants, only two individuals from the Sales and Operation Division. This approach aligns with Kamberelis (2005), who stated that under such conditions, FGD with a small group of two to five participants is appropriate.

3. Documentation
   Documentation refers to the process of recording the proceedings of the discussion, whether through written notes, audio recordings, or video, to capture key points and facilitate data analysis. Documentation in this study consisted of audio recordings and photographs taken during the FGD activities. These materials were used to validate and reinforce the findings obtained from observations and interviews conducted at PT PGN Semarang Area.

RESULT AND DISCUSSION

Internal Strength Analysis of the Company

Based on discussions conducted through the FGD method regarding the strengths of PT PGN Semarang Area in expanding Jargas for the household and small-customer segments, several factors were identified as key advantages of Jargas provided by PT PGN Semarang Area. In this discussion, two internal informants actively conveyed their perspectives, enabling the collection of more in-depth data related to the company's strength factors in expanding Jargas in the Semarang region. The following summarizes the FGD results related to the internal strengths supporting Jargas expansion:

1. Guaranteed Gas Supply
   PT PGN Semarang Area's primary advantage lies in its stable and continuous gas supply. Unlike LPG cylinders, which frequently experience shortages, gas supplied by PT PGN Semarang Area is delivered directly through pipeline networks to customer households. This ensures that customers do not need to worry about sudden gas depletion. Such supply reliability is crucial for household consumers who depend on gas for daily activities such as cooking.
2. Competitive Pricing and Efficient Usage
   PT PGN Semarang Area offers gas at more competitive prices compared to non-subsidized LPG, especially for small consumers. Moreover, stable gas supply supports more predictable and efficient household expenditures. Unlike LPG, which must be purchased periodically and is subject to fluctuating prices, the Jargas system enables customers to manage energy consumption efficiently and economically.
3. Availability of an Operational Team
   PT PGN Semarang Area is supported by a dedicated operational team known as Tim Penanganan Gangguan (TPG), which is available to assist customers in the event of technical issues or disruptions in Jargas usage. The existence of this team provides added value in terms of service quality and reinforces customer trust in PGN's services. Customers feel safer and more comfortable knowing that professional assistance is available at any time.
4. Monthly Gas Consumption Monitoring
   PT PGN Semarang Area provides a system that allows customers to monitor their gas consumption. Through monthly usage graphs, customers can track how much gas they consume each month. This feature encourages greater awareness of energy use and enables customers to control consumption more effectively. Such transparency is rarely available with LPG use, where purchases are made only when depleted, without any historical usage data.

Based on the results of the FGD with internal informants, it can be concluded that PT PGN Semarang Area possesses several key internal strengths that strongly support the expansion of Jargas into the household segment. These strengths include:

1. Reliable and continuous gas supply

2. Competitive and efficient pricing
3. Availability of Tim Penanganan Gangguan (TPG)
4. Transparent monthly monitoring of gas usage

These findings align with the concept of SWOT analysis, which defines strengths as internal factors that provide competitive advantages (Phadermrod et al., 2019). The identified strengths demonstrate PGN's capability to meet growing community demand for clean and efficient energy. The effective utilization of these internal strengths corresponds with expansion strategies described by Esterlina and Firdausi (2020), wherein successful expansion enhances service capacity and broadens market reach.

Identification of Weaknesses in Organizational Structure and Operational Processes

Based on discussions conducted through the FGD method regarding the weaknesses faced by PT PGN Semarang Area in expanding the household gas network, several internal constraints were identified that influence the effectiveness and speed of the expansion process. In this discussion, two internal informants actively shared their perspectives on the challenges encountered in developing Jargas for the household segment within the Semarang region. The following presents the results of the FGD, outlining the key weakness factors:

1. Lengthy Process of Determining Customer Interest
   Before expanding Jargas, PT PGN Semarang Area must first gather data on customer interest. This process includes the submission of the Final Investment Decision (FID), which requires confirmation that enough potential customers exist to justify the investment in pipeline construction and avoid idle assets. This stage is time-consuming due to the need to collect customer request forms or Formulir Registrasi Berlangganan Gas (FRBG) and conduct comprehensive field surveys. As a result, this administrative process can discourage potential customers who are initially interested.
2. Dependence on Anchor Industries
   A major constraint in expanding the gas network is the reliance on anchor industries capable of sustaining economically viable gas consumption for household networks. An anchor industry refers to a large industrial consumer with high gas usage that serves as the primary load-bearing entity for network efficiency and financial feasibility. Without the presence of such industries, the development of Jargas becomes less efficient and more difficult to implement due to insufficient baseline consumption levels.
3. Need for Bundling with Industries to Subsidize Household Jargas
   To maintain the operational sustainability of Jargas for households, PGN must conduct bundling with industrial users, whereby the consumption of anchor industries helps subsidize the cost of supplying gas to household customers. Coordinating the needs and requirements of both sectors adds complexity and presents its own challenges in planning and implementation. This structural interdependence can slow down the expansion process, particularly in regions with a weak industrial presence.

Based on the FGD findings, PT PGN Semarang Area faces several internal weaknesses that require strategic attention to support the effective expansion of Jargas for household and small-customer segments. These weaknesses include:

1. The lengthy process of validating customer interest
2. Dependence on the presence and stability of anchor industries
3. The necessity for bundling mechanisms to maintain operational efficiency

These findings are consistent with the definition of weaknesses in SWOT analysis, which refers to internal limitations that hinder the company from achieving its strategic objectives (Phadermrod et al., 2019). Addressing these weaknesses is crucial to ensuring that expansion efforts can proceed more efficiently and in alignment with future growth targets.

External Opportunities Supporting Business Development

FGD conducted with internal informants from PT PGN Semarang Area revealed several external opportunities that can be leveraged by the company to expand Jargas for household and small-customer segments. These opportunities arise from market dynamics, government policies, and potential partnerships with third parties that can accelerate the expansion process. The following outlines the key opportunity factors identified through the FGD:

1. Collaboration with Vendor Partners to Reduce Installation Costs
   PT PGN Semarang Area can establish strategic partnerships with vendor partners to reduce Jargas installation costs for household customers, particularly those in the small-consumer segment. Through this collaborative scheme, customers are not required to bear the full installation investment because vendors can provide installation support. This arrangement increases affordability and enhances public interest in adopting Jargas services.
2. Opportunities for Expansion into New Areas
   PT PGN Semarang Area identifies opportunities to expand into new areas beyond existing main pipeline networks. Regions with high population density and strong customer interest present promising potential for development. A high volume of FRBG submissions from a particular location increases investment justification due to improved construction efficiency and higher service demand.
3. Availability of Diverse Vendors
   The availability of multiple vendors, although many originate from outside the Semarang region, offers flexibility in project implementation. This variety of vendors provides PGN with options to adjust procurement and execution according to technical needs. However, the challenge lies in the mobilization costs associated with vendors from distant regions.
4. Unstable and Unregulated LPG Prices
   One of the issues associated with LPG usage is the inconsistency and variation of prices across different retail agents. This price volatility makes it difficult for households to estimate their monthly energy expenses. PT PGN Semarang Area, by contrast, provides a more stable and predictable gas pricing model, offering households a more reliable alternative to fluctuating LPG prices.

Based on the FGD results, PT PGN Semarang Area has access to several external opportunities that can be utilized to enhance the expansion of Jargas for households and small consumers. These opportunities include:

1. Strategic partnerships with vendors to lower installation costs
2. Expansion into new areas with high FRBG demand
3. Availability of diverse vendors capable of supporting project execution
4. Market instability in LPG pricing, creating a need for more predictable alternatives

These opportunities align with the concept of "opportunities" in SWOT analysis, which refers to external conditions that can provide competitive advantages for the organization (Phadermrod et al., 2019). Furthermore, in the context of business expansion, these opportunities form a strong foundation for sustainable growth strategies (Esterlina & Firdausi, 2021). Therefore, it is essential for PT PGN Semarang Area to optimize these opportunities to expand its customer base and support the national energy mix objectives.

Evaluation of External Threats to Company Stability and Growth

Based on the FGD, several external threats were identified that may disrupt the stability and growth of PT PGN Semarang Area in expanding the household gas network. These threats originate from external factors beyond the company's control but significantly influence the success of the Jargas program. The following outlines the key threat factors identified through the FGD:

1. High Public Dependence on Subsidized LPG
   One of the most substantial challenges faced by PT PGN Semarang Area is the strong public dependence on subsidized LPG 3 kg. The significantly lower price of subsidized LPG makes

it appear more economical for households when compared to Jargas. This price disparity slows the conversion process and contributes to low public interest in transitioning to natural gas networks.

2. Underdeveloped Public Perception and Awareness
   Despite the stable supply and competitive pricing offered by PT PGN Semarang Area, many members of the public still lack understanding or confidence in the advantages of Jargas. Limited public education and outreach efforts contribute to resistance toward switching from LPG to Jargas. This lack of awareness represents a substantial barrier to adoption, especially in areas unfamiliar with natural gas infrastructure.
3. Competition with Alternative Energy Sources
   In addition to competition from LPG, PGN also faces threats from emerging alternative energy sources increasingly adopted by communities. For instance, some households—particularly in rural or environmentally aware communities—have begun utilizing biogas generated from organic waste as a cooking fuel. Solar-powered stoves are also being introduced as eco-friendly options, although their use remains contingent on regions with sufficient sunlight exposure. Moreover, bioethanol derived from fermented crops such as sugarcane and corn is gaining attention as a cleaner and renewable household energy alternative. The growing presence of these alternative energy sources increases competition, offering households more options that may be perceived as environmentally sustainable.

Based on the FGD findings, several external threats must be addressed by PT PGN Semarang Area as it expands Jargas into the household segment:

1. Strong dependence on subsidized LPG, which presents significant price competition
2. Low public awareness and limited understanding of Jargas' benefits
3. The rise of alternative energy sources, such as biogas, solar stoves, and bioethanol

These findings align with the SWOT framework, which defines threats as external factors that may hinder organizational development (Phadermrod et al., 2019). To mitigate these threats, PGN must enhance communication strategies, strengthen public education initiatives, and collaborate with relevant stakeholders. These efforts are crucial to minimizing resistance and ensuring the company's growth in the natural gas distribution sector.

IFAS Matrix Analysis

Table 1 presents the Internal Factor Analysis Strategy (IFAS) matrix, compiled based on interviews conducted through the FGD method during the internship period at PT PGN Semarang Area. This analysis aims to identify key internal factors that influence company performance, both in terms of strengths and weaknesses. Through this matrix, the most dominant strengths and weaknesses can be clearly observed, providing essential insights for strategic managerial decision-making.

Table 1. IFAS Matrix

Internal Factor Analysis Strategy	Weight	Rating	Score	Explanation
Strength				
Guaranteed Gas Supply	0.15	4	0.60	Ensures the continuity of direct gas distribution to customers without concerns about depletion, in contrast to LPG, which is often scarce.
Competitive Pricing and Efficient Usage	0.10	4	0.40	Offers a more economical price compared to non-subsidized LPG, with usage that can be regulated to support household efficiency.
Availability of an operational team called Tim Penanganan	0.08	3	0.32	Provides a dedicated team that responds promptly to technical disturbances, thereby strengthening customer trust.

Gangguan (TPG)				
Monthly Gas Consumption Monitoring System	0.07	2	0.21	Allows customers to monitor their monthly gas consumption, promoting transparency and awareness of usage.
Sub Total	0.40		1.53	
Weakness				
Lengthy Process of Validating Customer Interest	0.10	2	0.20	Causes potential customers to hesitate to register.
Dependence on Anchor Industry	0.20	2	0.40	Poses a high risk if the primary industries cease operations.
Need for Bundling with Industries to Subsidize Household Jargas	0.10	1	0.20	Slows the expansion into the household sector.
Sub Total	0.40		0.80	
TOTAL	1.00		2.33	

Source: Processed Data (2025)

The determination of weights in the Internal Factor Analysis Strategy (IFAS) was carried out by the researcher based on the results of interviews and discussions conducted through a FGD during the internship period at PT PGN Semarang Area. The weighting process was performed using information and perspectives directly provided by internal company informants involved in the operation and expansion planning of the gas distribution network. Based on the IFAS analysis presented in the table above, the major internal strengths of PT PGN Semarang Area are as follows:

1. Guaranteed Gas Supply, which received the highest weight of 0.15 and a rating of 4, resulting in a final score of 0.60. This underscores that ensuring a stable and continuous gas supply is a critical aspect of maintaining customer trust and ensuring the continuity of energy distribution, both for household consumers and small-scale industries. This represents a significant internal strength.
2. Competitive Pricing and Usage Efficiency, with a weight of 0.10 and a score of 0.40, along with the Availability of the Operational Team or Tim Penanganan Gangguan (TPG), which has a weight of 0.08 and a score of 0.32. These two factors indicate that PGN is not only able to offer services at more competitive prices compared to non-subsidized LPG but also has a responsive technical support system capable of addressing service disruptions in the field.
3. The presence of a monthly gas usage monitoring system also serves as an additional advantage, although with a smaller weight, as it helps enhance customer awareness of their consumption in a transparent and measurable manner.

On the other hand, the most prominent internal weaknesses include:

1. Dependence on an Anchor Industry, with a weight of 0.20 and a score of 0.40. This dependency significantly affects the feasibility of expanding the household gas network, as the existence of large industries is required to support distribution efficiency.
2. Other weaknesses include the Lengthy Process of Determining Customer Interest (weight 0.10, score 0.20) and the Need for Bundling with Industry to Subsidize Household Gas Networks (weight 0.10, score 0.20). These factors illustrate administrative and technical barriers that slow down expansion into new areas.

Based on the total overall score, it can be concluded that the internal strengths of PT PGN Semarang Area are more dominant than its weaknesses. This is evident from the total strength score

of 1.53 compared to the weakness score of 0.80. Nevertheless, several challenges—such as dependence on industrial partners, complex administrative processes, and bundling strategies—require serious attention. Addressing these weaknesses will support the effectiveness of the gas network expansion, particularly in the household and small-scale customer segments that constitute the main focus of future development.

EFAS Matrix Analysis

Table 2 presents the External Factor Analysis Strategy (EFAS) matrix, which was also compiled based on interview results obtained through a FGD conducted during the internship at PT PGN Semarang Area. This analysis aims to identify external factors that may influence the company's sustainability and development, both in terms of opportunities and threats. Through the EFAS matrix, the company can identify the most significant opportunities that may be leveraged for expansion and service improvement, as well as the major threats that need to be anticipated to prevent potential obstacles to future business growth.

Table 2. EFAS Matrix

External Factor Analysis Strategy	Weight	Rating	Score	Explanation
Opportunities				
Collaboration with Vendor Partners	0.15	4	0.60	The opportunity to reduce installation costs through partnership schemes with vendors, which can attract small-scale customers to subscribe to Jargas.
Opportunities for Expansion into New Areas	0.13	3	0.39	High demand for FRBG in newly developed areas can enhance investment efficiency and accelerate network expansion.
Availability of Diverse Vendors	0.07	2	0.14	The large number of vendors, although the majority are from outside the region provides flexibility in project implementation, although mobilization costs remain a challenge.
Unstable and Unregulated LPG Prices	0.05	3	0.15	Fluctuations in LPG prices create uncertainty for consumers, offering an opportunity for PGN to promote its more stable pricing.
Sub Total	0.40		1.28	
Threats				
High Public Dependence on Subsidized LPG	0.20	2	0.40	The significantly lower price of subsidized LPG makes the public reluctant to switch to Jargas.
Underdeveloped Public Perception and Awareness	0.10	2	0.20	Limited public education results in a lack of understanding regarding the advantages of Jargas, leading to resistance toward adopting the new service.
Competition from Alternative Energy Sources	0.10	2	0.20	Alternative energy sources such as biogas, solar energy, and bioethanol are increasingly being considered by the community, creating competing options to natural gas.
Sub Total	0.40		0.80	
TOTAL	1.00		2.08	

Source: Processed Data (2025)

The determination of weights in the Internal Factor Analysis Strategy (IFAS) was carried out by the researcher based on the results of interviews and discussions conducted through a FGD during the internship period at PT PGN Semarang Area. The weighting process was performed using information and perspectives directly provided by internal company informants involved in the operation and expansion planning of the gas distribution network. Based on the IFAS analysis presented in the table above, the major internal strengths of PT PGN Semarang Area are as follows:

1. Partnerships with Vendor Partners
   This factor represents the highest-scoring opportunity, with a weight of 0.15, a rating of 4, and a final score of 0.60. Such partnerships are considered strategic because they can reduce installation costs for customers, particularly the small household segment, thereby increasing their interest in subscribing to Jargas.
2. Expansion Opportunities into New Areas
   This factor has a weight of 0.13, a rating of 3, and a score of 0.39. This indicates that there are still potential areas that can be targeted by PT Perusahaan Gas Negara, particularly regions with high population density and significant FRBG demand. This market potential serves as a crucial foundation for future network development.
3. Opportunities from the Availability of Diverse Vendors
   PT PGN Semarang Area also has access to numerous vendors from outside the region, most of which are based in Surabaya and West Java. Despite this, the diversity of vendors remains an opportunity. This factor has a weight of 0.07, a rating of 2, and a score of 0.14. The availability of multiple vendors provides PGN with flexibility in procurement and project implementation, although mobilization costs remain an important consideration.
4. Instability of LPG Prices
   The instability and lack of control over LPG prices present an opportunity for PGN. This factor has a weight of 0.05, a rating of 3, and a score of 0.15. Price fluctuations in the LPG market cause consumers to seek more stable and transparent alternatives, creating an opening for PGN to promote Jargas as a more consistent household energy solution.

Based on the EFAS matrix analysis, several external factors also pose threats to the success of household gas network expansion, including:

1. Dependence on Subsidized LPG
   This is the most significant threat, with a weight of 0.20, a rating of 2, and a score of 0.40. The substantially lower price of subsidized LPG makes it difficult for the public to switch to Jargas, despite its advantages, due to the considerable price disparity.
2. Low Public Awareness and Limited Consumer Education
   The factor “Insufficient Public Perception and Awareness” carries a weight of 0.10, a rating of 2, and a score of 0.20. Limited public understanding of the benefits of Jargas leads to resistance toward energy transition, thereby hindering expansion into the household segment.
3. Competition from Alternative Energy Sources
   The factor “Competition with Alternative Energy Sources Other than Gas” is another challenge, with a weight of 0.10, a rating of 2, and a score of 0.20. Alternative energy options such as biogas, solar-powered stoves, and bioethanol are increasingly being considered, particularly in regions that support renewable energy development, making them potential competitors to PGN.

Based on the analysis, the total EFAS score of 1.28 indicates that the external opportunities for PT Perusahaan Gas Negara Semarang Area are still stronger than the threats. However, the company must adopt adaptive strategies to address reliance on subsidized LPG, limited public understanding, and the rise of alternative energy sources to ensure that Jargas expansion remains competitive and sustainable.

SWOT Matrix Analysis

Table 3 presents the SWOT matrix, which outlines the identified strengths, weaknesses, opportunities, and threats faced by PT PGN Semarang Area. The matrix was developed using data gathered from the FGD sessions during the internship period. This framework enables the formulation of strategic alternatives across the four SWOT quadrants (SO, WO, ST, WT) to guide the company's expansion efforts.

The SWOT matrix integrates internal and external factors to produce four groups of strategies: SO (Strength–Opportunity), ST (Strength–Threat), WO (Weakness–Opportunity), and WT (Weakness–Threat). The following summarizes the strategy formulations:

1. SO Strategies (Strength – Opportunities)
   SO strategies aim to leverage internal strengths to maximize external opportunities:
   a. Strengthening vendor partnerships using cost efficiency and competitive pricing
      PGN can utilize its competitive gas pricing and operational efficiencies to enhance collaboration with vendor partners, lowering installation costs for customers and increasing adoption.
   b. Using guaranteed gas supply to support expansion into new regions
      Stable and reliable gas supply provides a solid foundation for entering new areas with high development potential.
   c. Expanding the role of the operational team or Tim Penanganan Gangguan (TPG) and monitoring system
      Enhanced service reliability through TPG support and transparent monitoring can attract new customers by improving trust in service quality.
   d. Promoting monthly gas usage monitoring as a value-added feature
      This strengthens PGN's position as an efficient and transparent energy provider for households.
2. ST Strategies (Strength - Threats)
   ST strategies use internal strengths to mitigate external threats:
   a. Emphasizing stable gas supply to reduce dependence on subsidized LPG
      Clear communication regarding the reliability and stability of Jargas can help shift public preference away from subsidized LPG 3 kg.
   b. Optimizing TPG services and monitoring systems to counter negative public perceptions
      Improving service responsiveness and transparency helps build positive public sentiment toward Jargas.
   c. Positioning Jargas as a safer and more sustainable alternative compared to biogas and bioethanol
      Highlighting safety, environmental benefits, and reliability can differentiate Jargas from competing energy sources.
3. WO Strategies (Weakness – Opportunities)
   WO strategies aim to reduce weaknesses by utilizing external opportunities:
   a. Simplifying the customer interest validation process through vendor collaboration

Vendor-assisted approaches can reduce delays in collecting FRBG data and accelerate expansion timelines.

b. Adjusting marketing strategies to reduce dependence on Anchor Industries
By targeting high-demand residential regions, PGN can expand even in areas without major anchor industries.

c. Designing cross-subsidy schemes between industrial and household users
A well-structured bundling model can help balance operational costs and reduce reliance on a single sector.

4. WT Strategies (Weakness - Threats)
WT strategies focus on minimizing internal weaknesses while mitigating external threats:

a. Reducing dependency on Anchor Industries by diversifying early adopters
Encouraging other commercial sectors to adopt Jargas early can reduce vulnerability to fluctuations in industrial consumption.

b. Enhancing public education and energy literacy
Targeted campaigns are needed to increase understanding of Jargas benefits and reduce public hesitation.

c. Strengthening cross-sector collaborations
Partnerships with local governments, vendors, and community organizations can accelerate infrastructure development and improve competitiveness against emerging alternative energy sources.

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Tabel 3. Matriks SWOT

EFAS \ IFAS		**Strengths**	**Weakness**
		1. Guaranteed Gas Supply 2. Competitive Pricing and Usage Efficiency 3. Availability of the Operational Team or Tim Penanganan Gangguan (TPG) 4. Monthly Gas Usage Monitoring	1. Lengthy Process of Determining Customer Interest 2. Dependence on Anchor Industries 3. The Need for Industry Bundling to Subsidize Household Gas Networks
Opportunities	1. Partnerships with Vendor Partners to Reduce Installation Costs 2. Opportunities for Expansion into New Areas 3. Availability of Diverse Vendors 4. Unstable and Poorly Regulated LPG Prices	1. Utilizing cost efficiency and competitive pricing to strengthen partnerships with vendors. 2. Leveraging the reliability of gas supply to support expansion into new areas. 3. Expanding the role of the operational and monitoring teams to enhance the confidence of new customers. 4. Offering a monthly gas consumption monitoring system as a service advantage that supports household energy efficiency.	1. Streamlining the customer identification process through a vendor-based collaboration approach. 2. Adjusting marketing strategies to ensure that dependence on anchor industries does not hinder expansion into new areas. 3. Designing cross-sector subsidy schemes to improve the efficiency of bundling between industrial and household customers.
Threats	1. High Public Dependence on Subsidized LPG 2. Public Perception That Is Not Yet Fully Developed 3. Competition from Alternative Energy Sources Other Than LPG	1. Emphasizing the advantage of a stable gas supply to reduce public dependence on subsidized LPG. 2. Optimizing TPG services and monitoring systems to address negative public perceptions. 3. Promoting natural gas services as a safer and more sustainable alternative compared to other energy sources such as biogas and bioethanol.	1. Reducing dependence on anchor industries by encouraging other sectors to serve as early adopters of Jargas. 2. Enhancing customer education to strengthen public perception and trust in Jargas. 3. Increasing cross-sector collaboration to accelerate network development and reduce the risk of losing competitiveness to other energy sources.

Source: Processed Data (2025)

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CONCLUSION AND SUGGESTION

Conclusion

Based on the IFAS and EFAS analyses, it can be concluded that the internal strengths of PT PGN Semarang Area (total score: 1.53) and external opportunities (total score: 1.28) are more dominant than the identified weaknesses and threats. The most significant internal strength is the guaranteed stability of gas supply, while the most notable external opportunity is the potential for collaboration with vendor partners and expansion into new high-demand areas. Nevertheless, the company must address several key weaknesses, such as the lengthy customer validation process and dependence on large anchor industries. Additionally, major threats particularly the dominance of subsidized LPG, pose challenges to customer conversion and adoption of Jargas. Overall, PGN possesses strong internal potential for expansion, but must reinforce communication and educational strategies to effectively respond to external barriers.

Suggestion

Based on the findings of this study, the following recommendations are proposed for PT PGN Semarang Area:

1. Enhance Public Socialization and Education Programs
   It is essential to intensify outreach and educational initiatives for the public, particularly regarding safety, cost efficiency, and sustainability aspects of Jargas. Clear communication strategies can help shift public perception and increase customer interest in Jargas as an alternative to LPG subsidi.
2. Simplify the Expansion Process
   The company is advised to simplify the process of collecting customer interest (FRBG) and the Final Investment Decision (FID) through system digitalization or strategic collaboration with local vendors. Streamlining these procedures will help accelerate expansion and reduce administrative bottlenecks.
3. Strengthen Cross-Sector Integration
   Integration between household Jargas and the commercial/industrial sectors should be reinforced to ensure operational efficiency and reduce reliance on a single anchor industry. Cross-subsidy or bundling mechanisms may provide more stable operational sustainability.
4. Recommendations for Future Research
   Future research is encouraged to adopt a quantitative approach to empirically examine dominant factors influencing the decision of potential customers to choose Jargas over subsidized LPG. Analytical tools such as Logistic Regression or Structural Equation Modeling (SEM) could generate more measurable strategic priorities.

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