

MEASUREMENT OF CUSTOMER PROFITABILITY AND ANALYSIS OF CUSTOMER CHARACTERISTICS AT PT Z: A CASE STUDY OF AN ENERGY DISTRIBUTION COMPANY



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Abstract

This study aims to measure customer profitability and analyze customer characteristics at PT Z, a state-owned enterprise operating in the energy distribution sector. Despite continuous growth in the number of customers, PT Z has experienced fluctuating profitability, indicating the need for a more granular, customer-level financial analysis. This research adopts a quantitative case study approach complemented by qualitative insights. Customer Profitability Analysis (CPA) is applied by systematically allocating revenues and operating costs to different customer segments using an Activity-Based Costing (ABC) approach, with electricity sales volume (kWh sold) as the primary cost driver. Customer characteristics are further analyzed based on three dimensions: profitability, significance, and strategic value. The results reveal that customer profitability at PT Z is highly heterogeneous and strongly influenced by installed capacity, consumption intensity, and tariff structure. Medium- to large-capacity customers with tariffs close to economic pricing consistently generate positive profits, while low-capacity customers across most segments tend to produce negative profit margins. Customer mapping based on the strategic, significant, and profitable dimensions shows that Type A customers—those that are strategic, significant, and profitable—represent the main value drivers of the company. Conversely, several strategic and significant customer groups remain unprofitable, reflecting the impact of regulated tariffs and public service obligations. Overall, this study demonstrates that customer profitability analysis is a crucial strategic tool for improving value-based customer management in the energy distribution industry. The proposed model provides PT Z with a more accurate basis for resource allocation, service differentiation, and policy evaluation, enabling the company to balance financial sustainability with regulatory and social responsibilities.

Keywords: Customer Profitability, Customer Characteristics, Activity-Based Costing, Energy Distribution, Customer Relationship Management

INTRODUCTION

The ongoing Industrial Revolution 4.0 has intensified business competition across industries, compelling organizations to continuously maintain and strengthen their competitive advantage in an increasingly uncertain environment. In this context, customers represent one of the most critical strategic assets for sustaining competitiveness. Customer experience has been widely recognized as a significant driver of organizational success and competitive advantage (Ramaseshan et al., 2013). Customers who experience high levels of satisfaction are more likely to engage in continuous transactions, thereby fostering long-term relationships with firms. Strong relationships between organizations and their customers contribute to the development of trust and loyalty, which serve as key intangible assets for achieving sustainable competitive advantage (Clulow et al., 2007).

While customer experience and trust are essential elements in building competitive advantage, firms cannot deliver identical services to all customers. Customers differ in terms of preferences, behaviors, and levels of contribution to organizational revenue, implying that uniform service strategies may reduce operational effectiveness. Consequently, organizations must recognize that each customer possesses a different strategic value for business sustainability. Given limited organizational resources, firms are required to prioritize customer segments and tailor service treatments accordingly to ensure optimal resource allocation (Thakur & Workman, 2016). A deep understanding of customer segmentation is therefore crucial to maximize profitability while maintaining service effectiveness.

In this regard, Customer Profitability (CP) has emerged as a fundamental component of Customer Relationship Management (CRM), as it provides valuable insights into the economic contribution of individual customers or customer segments (Holm et al., 2012). Two widely adopted approaches for quantifying customer profitability are Customer Profitability Analysis (CPA) and Customer Lifetime Value (CLV). According to Blocher et al. (2019), CPA supports managerial decision-making by identifying highly profitable customers, enabling more accurate cost control at the customer level, and uncovering opportunities for offering additional products or services. As a result, accurate analysis of customer behavior and contribution becomes increasingly important for organizations seeking to enhance profitability and sustain competitive advantage.

The need for effective customer management is also highly relevant to PT Z, a state-owned enterprise operating in the energy distribution sector. PT Z manages its operations through 17 units, consisting of 16 customer service units and one distribution control unit, distributed across the Special Capital Region of Jakarta, West Java, and Banten Provinces. In 2024, PT Z served a total of 5,403,929 customers, reflecting a large-scale and complex operational environment. Although the number of customers has consistently increased from 2020 to 2024 across all customer segments, this growth has not been accompanied by a proportional increase in company profitability.

Despite continuous customer growth, PT Z has faced significant challenges in achieving optimal profit performance in recent years. As a state-owned enterprise operating within a regulated utility industry, PT Z is subject to strict tariff regulations, which directly affect its revenue structure. Financial data from 2020 to 2024 indicate fluctuations in net income, with a notable decline in 2022 and a recovery in subsequent years. However, net profit levels in 2023 and 2024 have yet to surpass the company's optimal performance

achieved in 2020, despite a substantial increase in the customer base. This discrepancy highlights the critical need for a more granular understanding of customer-level profitability.

To improve profitability, companies must identify which customer segments contribute most significantly to earnings. Customer Profitability Analysis (CPA) offers a relevant approach, as it enables firms to measure customer profitability more accurately, allocate costs more effectively, and identify opportunities for developing new products or services. Prior empirical studies across various sectors including pharmaceutical distribution (Nashir, 2019), non-profit organizations (Handayani, 2021), logistics companies (Triagustina, 2021), and heavy equipment distribution firms (Colimah, 2022) have demonstrated the strategic benefits of customer profitability analysis in supporting managerial decision-making.

Furthermore, preliminary interviews with the accounting department of PT Z revealed that the company has not yet conducted a structured measurement of customer profitability or a systematic analysis of customer characteristics. Profit and loss calculations are still performed at an aggregated corporate level, making it difficult to identify the specific contributions of revenue, costs, and profits generated by each customer segment. This limitation restricts the company's ability to formulate data-driven strategic decisions related to customer management.

Accordingly, this study aims to measure customer profitability by customer segment through the systematic allocation of revenues and operating expenses, and to analyze customer characteristics based on dimensions of strategic value, significance, and profitability. By providing a comprehensive overview of the position and contribution of each customer segment within PT Z's customer portfolio, this research seeks to support more effective managerial decision-making. In addition, given the limited empirical studies on customer profitability and customer characteristics within the energy distribution industry, this research is expected to contribute to the existing literature while offering practical insights for PT Z in enhancing financial performance and customer management effectiveness.

RESEARCH METHOD

Research Strategy and Approach

This study adopts a **case study method** with a **quantitative approach complemented by qualitative data**. This approach is employed to provide a comprehensive understanding of customer profitability and customer characteristics at PT Z. The case study method is considered appropriate because it enables in-depth exploration of a specific phenomenon within a defined organizational context and time frame (Creswell & Poth, 2023; Priya, 2021). Furthermore, it allows for the collection of detailed evidence from multiple data sources, including documents, interviews, archival records, and observations (Yin, 2018).

The research begins with the identification of the core problem, namely the absence of structured information regarding profitability by customer type and the lack of systematic customer characteristic analysis at PT Z to support managerial decision-making. Guided by the conceptual framework, this study focuses on measuring the economic contribution of each customer type through the analysis of financial and operational customer data. A quantitative approach is selected to ensure objective and measurable results, particularly in

identifying revenue patterns, cost structures, and economic benefits generated by different customer segments. Qualitative insights are incorporated to strengthen contextual understanding and support the interpretation of quantitative findings.

The research is conducted through several systematic stages. The first stage involves the collection of secondary data, including financial data and customer data of PT Z for the period 2020–2024, covering revenue by customer type, service-related costs, and the number of customers. The second stage consists of data processing to calculate **Customer Profitability (CP)** for each customer type by comparing revenue contributions with the costs associated with serving those customers. The third stage involves analyzing customer characteristics based on consumption patterns, growth potential, and profitability contributions. The fourth stage focuses on interpreting the results by mapping customers into specific categories according to their value and potential, aligned with a customer evaluation framework that classifies customers into groups to be retained, developed, improved in terms of profitability, or deprioritized. The final stage involves formulating managerial recommendations for PT Z based on the results of customer profitability measurement and customer characteristic analysis, ensuring that the study provides both analytical insights and actionable implications for improving company profitability.

Data Sources and Research Instruments

This study utilizes both **quantitative and qualitative data**. Quantitative data consist of financial and non-financial information, such as operating revenues and operating expenses related to energy distribution by customer type. These data are used to calculate Customer Profitability by comparing revenues earned with service costs consumed by each customer type. Qualitative data are employed to understand how customer profitability measurement and customer characteristic analysis are applied within PT Z's managerial processes.

Primary data are obtained through interviews with internal stakeholders of PT Z, including the Accounting Manager, Planning Manager, Operations and Maintenance Manager, Assistant Manager of Revenue Protection, and Customer Service staff. The interviews aim to gather information related to revenue structures by customer type, components of energy distribution costs, and internal policies regarding customer management. In addition, interviews are conducted to explore the challenges faced by the company in improving profitability and how customer contributions to financial performance have been evaluated thus far. These insights are essential for ensuring accurate customer profitability calculations and for understanding the organizational context in which the analysis is implemented. For confidentiality purposes, interviewees are referred to using abbreviations, as presented in Table 1.

Secondary data include the number of customers by customer type and the volume of energy distributed by PT Z in 2024. These data are obtained from internal company reports and are used to identify customer composition and analyze energy consumption patterns across customer types. Information on customer numbers and energy distribution volumes supports the analysis of customer characteristics, such as segment dominance, usage intensity, and long-term contribution potential. Consequently, these secondary data reinforce the customer profitability analysis and customer mapping based on value and contribution.

The research employs interviews and document analysis as the main data collection instruments. Both structured and unstructured interview techniques are used. Structured

interviews are conducted based on a predefined list of questions aligned with the research indicators, including revenue structure, distribution cost components, and customer management policies. This technique ensures that all quantitative and qualitative data required for customer profitability calculation and customer characteristic analysis are systematically collected.

Unstructured interviews are conducted with the Planning Manager and the Operations and Maintenance Manager to obtain additional insights that may not be captured through structured questions. This approach enables a deeper understanding of organizational context, internal policies, and customer management practices at PT Z.

Document analysis is performed on financial statements, customer reports, and energy distribution reports by customer type. These documents form the basis for calculating Customer Profitability, as they provide detailed information on revenues and costs attributable to each customer segment.

Customer Profitability is calculated by subtracting customer-related service costs from the revenue generated by each customer type. Interview data and document analysis are used to identify relevant cost components, including distribution costs, customer service costs, and administrative costs. To classify customers, the study analyzes customer characteristics based on energy consumption patterns, revenue contribution, and profitability levels. The results are then used to categorize customers into groups such as highly profitable customers, less profitable customers, potential customers, and high-cost customers. Accordingly, the research instruments serve not only as tools for data collection but also as a foundation for customer measurement and segmentation aligned with the study's objectives.

Data Analysis

This study applies descriptive analysis combined with the explanation-building technique. This approach allows the researcher not only to describe empirical conditions based on the data but also to develop in-depth explanations of relationships among variables and observed phenomena. As a result, the analysis extends beyond numerical presentation to generate comprehensive interpretations of customer profitability and customer characteristics at PT Z.

The first stage of data analysis involves developing a customer profitability model, which serves as a framework for calculating Customer Profitability based on revenues and costs consumed by each customer type. The second stage consists of calculating and evaluating customer profitability by customer type to determine their respective economic contributions and to identify customers that generate profits or incur losses for the company.

The subsequent stage focuses on customer characteristic analysis, aimed at understanding consumption patterns, strategic value, and the contribution of each customer type to the company. Customers are classified based on two main dimensions: strategic and significant. The strategic dimension refers to customer types that possess strategic value due to tariff characteristics and electricity capacity usage, typically involving large power capacity, higher tariff categories, and rates close to economic pricing, thereby contributing substantially to revenue structure and business stability. Additionally, customer types assigned by government policy as subsidy recipients are also classified as strategic. The significant dimension refers to customer types that contribute relatively large energy

consumption volumes to the company's operational and revenue performance, indicated by average electricity consumption per customer above the company-wide average.

Through this classification, the study determines whether a customer type should be retained, developed, improved in terms of profitability, or deprioritized in service allocation. The overall results of the analysis provide a comprehensive overview of customer profitability and customer characteristics, which serves as the basis for formulating managerial recommendations for PT Z.

RESULTS AND DISCUSSION

This study provides empirical evidence that customer profitability within the energy distribution industry is highly heterogeneous and strongly influenced by customer power capacity, consumption intensity, and tariff structure. The findings demonstrate that PT Z's overall profitability is not evenly distributed across customer segments, but rather concentrated in customers with medium to large installed capacity and higher levels of electricity consumption. This result confirms the central argument of customer profitability theory, which emphasizes that not all customers contribute equally to firm value and that treating customers uniformly may lead to inefficient resource allocation.

Customer Profitability Patterns across Segments

The results reveal a consistent pattern across almost all customer segments: customers with small installed capacity generate negative net profit margins, while customers with higher capacity and consumption levels tend to be profitable. Social, household, business, industrial, and government customers with low capacity (450 VA–900 VA) systematically exhibit negative profitability. This condition reflects a structural imbalance between regulated tariffs, operational costs, and service intensity for low-capacity customers. In regulated energy markets such as PT Z's operating environment, tariffs for low-capacity customers—particularly subsidized groups—are often set below cost-reflective levels, limiting the company's ability to recover operational and infrastructure costs.

Conversely, customers with higher installed capacity especially those above 3,500 VA in the household segment, above 6,600 VA in business and government segments, and above 14 kVA in industrial customers consistently generate positive profits and higher net profit margins. These customers benefit from economies of scale in electricity distribution, where incremental increases in consumption require relatively lower additional operating costs. This finding aligns with prior studies in utility and service industries, which argue that high-volume customers are more likely to absorb fixed and semi-fixed costs, thereby improving margin efficiency.

Strategic Implications of Segment-Level Profitability

The analysis further shows that profitability alone does not fully capture customer value. Several customer groups—particularly large industrial, traction, and bulk customers—are classified as strategic and significant but remain unprofitable. These findings highlight a critical managerial dilemma faced by energy distribution companies: certain customers are essential for system stability, load balancing, or public service obligations, yet they exert downward pressure on profitability.

In this context, the classification framework based on Strategic, Significant, and Profitable dimensions (Hope & Player, 2012) proves highly relevant. Customers categorized

as Type A (strategic, significant, and profitable) represent the core value drivers of PT Z's customer portfolio and should be prioritized in long-term relationship management, service reliability, and infrastructure planning. Meanwhile, Type B customers (strategic and significant but not profitable) require targeted corrective actions, such as tariff restructuring, cost efficiency improvements, or renegotiation of service terms, rather than disengagement.

The presence of Type D customers (strategic but neither significant nor profitable) across social, residential, business, and government segments underscores the financial burden of policy-driven service obligations. While these customers are essential from a socio-economic and regulatory perspective, their negative profitability highlights the importance of transparent subsidy mechanisms and compensation schemes to prevent cross-subsidization from eroding firm-level financial performance.

Value-Based Customer Management Perspective

From a value-based customer management perspective, the findings confirm that customer segmentation based on profitability and strategic value is crucial for improving financial sustainability. Customers in Type G (profitable but neither strategic nor significant) demonstrate that profitability alone does not necessarily translate into long-term strategic importance. Although these customers contribute positively to earnings, their relatively low consumption and limited strategic role suggest that aggressive resource allocation toward this group may not yield substantial long-term benefits.

The dominance of energy consumption (kWh sold) as a cost driver in both direct and indirect cost allocation further reinforces the importance of consumption-based metrics in evaluating customer value in energy utilities. Customers with higher consumption levels not only contribute more revenue but also utilize distribution infrastructure more efficiently, resulting in better cost absorption and margin performance.

Managerial and Policy Implications

The findings carry important implications for both managerial decision-making and public policy. For PT Z, the results emphasize the need to move beyond aggregate profitability analysis toward customer-level profitability measurement. By systematically identifying value-generating and value-eroding customers, the company can design differentiated service strategies, optimize cost allocation, and prioritize investments in segments with the highest economic returns.

At the policy level, the persistent losses associated with low-capacity and subsidized customers highlight the necessity of adequate government compensation mechanisms. Without sufficient subsidies or tariff adjustments, the financial burden of social and public service obligations may undermine the long-term financial sustainability of state-owned energy enterprises.

Overall, this study reinforces the argument that customer profitability analysis is not merely an accounting exercise but a strategic tool for balancing economic efficiency, regulatory compliance, and service equity. By integrating profitability metrics with strategic and operational considerations, PT Z can enhance its customer portfolio management and strengthen its financial resilience in a regulated energy market.

CONCLUSION

This study successfully develops a more comprehensive customer profitability measurement model for PT Z compared to the company's previous approach, which assessed profit and loss solely at an aggregated corporate level. The proposed model integrates all relevant revenue components—including electricity sales, government electricity subsidies, and compensation—as well as all major operating cost components, such as electricity purchase costs, maintenance, personnel expenses, depreciation of fixed assets, administrative expenses, rental costs, and other operating costs. Given that most costs cannot be directly traced to individual customer types, this study applies an Activity-Based Costing (ABC) approach, using electricity sales volume (kWh sold) as the primary cost driver for electricity purchase costs and other operating expenses. This approach enables a more proportional and accurate allocation of costs across customer types.

The results of the customer profitability analysis indicate that PT Z's profitability structure is strongly influenced by customers' installed capacity and consumption scale. Medium- to large-capacity customers with tariffs close to economic pricing consistently generate positive profits and relatively high net profit margins. This pattern is observed across household customers with capacities above 3,500 VA, business customers above 6,600 VA, industrial customers above 14 kVA, and government and special service customers with capacities exceeding 6,600 VA. In contrast, low-capacity customers across most segments—including social customers, small household customers, small business customers, small industrial customers, and certain low-capacity government and public lighting customers—tend to generate losses and negative net profit margins. These findings confirm that customer profitability within PT Z is highly heterogeneous and underscore the importance of customer-level financial evaluation for strategic decision-making.

Customer characteristic analysis is conducted using three key dimensions—profitable, significant, and strategic—which are subsequently used to classify customers into Customer Types A–H based on the framework proposed by Hope and Player (2012). The profitable dimension identifies customers generating positive profits, the significant dimension captures customers with average electricity consumption per customer above the company average, and the strategic dimension reflects customers' strategic importance based on installed capacity, tariff structure close to economic pricing, or government-mandated subsidy assignments. The analysis shows that Type A customers—those that are strategic, significant, and profitable—represent the core value drivers of PT Z's customer portfolio. Type C customers, which are strategic and profitable but not significant, and Type G customers, which contribute substantially to revenue and profit despite limited strategic or consumption significance, also play important roles in supporting overall profitability.

Conversely, Type B customers—those that are strategic and significant but not profitable, such as certain large industrial, traction, and bulk customers—and Type D customers, which are strategic but neither significant nor profitable, impose a substantial burden on company profitability. These findings highlight the financial implications of regulated tariffs, large-scale consumption characteristics, and public service obligations within the energy distribution sector.

Overall, this study demonstrates that Customer Profitability Analysis is a relevant and essential tool for designing more selective, value-based customer management strategies at

PT Z. By integrating profitability measurement with customer characteristic analysis, the proposed model provides a more accurate and actionable basis for managerial decision-making, enabling the company to balance financial sustainability with strategic and regulatory considerations.

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