

**FINANCIAL PERFORMANCE ANALYSIS, EVALUATION
AND HEALTH ASSESMENT OF STATE OWNED-
ENTERPRISE INDONESIA POWER UTILITY, BEFORE AND
AFTER IMPLEMENTATION OF MOBILE APPLICATION.**

EVIDENCE OF PT PLN (PERSERO)

(Q2.2016 – Q2.2025)



THESIS

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**A THESIS
Submitted in a partial fulfilment of the requirements for the degree of Master
of Business Administration**

CERTIFICATE OF APPROVAL

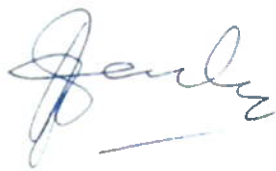
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We hereby declare that this Thesis is from student's work, has been read and presented to Institute IPMI Board of Examiners, and has been accepted as part of the requirements needed to obtain a Master of Business Administration Degree and has been found to be satisfactory.

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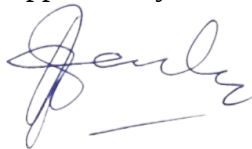
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NON-PLAGIARISM DECLARATION FORM

This Thesis is a presentation of our research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgement of collaborative research and discussions.

Also, this work is being submitted in partial fulfilment of the requirements for the Master of Business Administration degree, has not previously been accepted in substance for any degree, and is not being concurrently submitted in candidature for any degree.

Jakarta,

2026



Muchamad Eka Yuliantana

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ABSTRACT

Digital transformation is widely acknowledged as a driver of operational efficiency and financial performance in the energy sector. PT PLN (Persero), Indonesia's state-owned power provider, bears an increasing of account receivables for more than 15% in 2016 to 2019. This study used a quantitative exploratory methodology to examine quarterly financial statements from Q2 2016 to Q2 2025, assessing the company's financial performance before and after the implementation of the PLN Mobile application on December 20, 2020. The financial performance will be evaluated across five principal dimensions: profitability, liquidity, activity, solvency, and financial health. The method used the Shapiro-Wilk test to verify if the data is normal, then it uses Paired Sample t-tests for parametric data and Wilcoxon Signed-Rank tests for non-parametric data. The Altman Z-Score is used to measure financial health. The finding shows that PLN Mobile made a big difference in profitability (Return on Equity and Return on Investment), liquidity (Current and Cash Ratios), activity (Account Receivables, Asset and Inventory Turnover), solvency (Total Equity to Total Assets), and financial health (Altman Z-Score). Dupont Analysis clarifies that the Net Profit Margin had a big effect of more than three times after the implementation of PLN Mobile. The research finds that Digital Application has made PLN successfully become a more data-driven and operationally excellent organization.

Keywords: Financial Ratio, Financial Performances, Dupont Analysis, State-Owned Enterprise, Digitalization

CHAPTER 1: INTRODUCTION

1.1 Background Research

The growth of digital support is believed to improve productivity and increase economic development (Audrey et al., 2023). The number of individuals using internet are increasing around the globe. By 2023, over five billion individuals using internet (World Bank, 2023). Digital transformation, which involves integrating digital technologies into all elements of business, is believed to improve governance, increase operational efficiencies, and ultimately result in better financial outcomes for business entities.

Digitalization is a popular research topic that emphasizes the use of sophisticated technology to improve operational efficiencies, widen market reach, and boost overall profitability. Organizations may optimise their operations and adapt to changing market conditions by leveraging a wide range of digital tools and processes. This comprehensive perspective combines the findings of numerous and extensive studies to highlight the vast and diversified implications of digitalization on financial performance.

Digitalization has the potential to create new markets and improve operational management, making it a critical component of current corporate plans. According to research, simply having digitalization potential is insufficient to improve financial outcomes. A proper implementation is also critical. Digitalization performance can bridge the gap between capacity and financial results, improving operations and market expansion (Sudrajad et al., 2023). Furthermore, Digital transformation improves governance and operational efficiency, resulting in increased financial performance (Lei & Wang, 2023).

Integration of digital technologies into company operations has also been shown to cut operational costs and increase productivity. For example, Digital transformation considerably increases operational capacity and profitability, notably in the pharmaceutical industry (H. Liu et al., 2023). In addition, Financial digitization transforms organizations from traditional to virtual operations, resulting in significant financial benefits (Z. Jing et al., 2023).

Leadership and company culture emerge as critical drivers of digital change. Effective leadership and a supportive work environment had a beneficial impact on company performance through digital initiatives (Alasiri & Alkubaisy, 2022). Digitalization promotes business model innovation, resulting in increased competitiveness and profitability (Kasperovica & Lace, 2021). Corporate culture delivers a significant impact on the success of digital projects, implying that cultural alignment is critical for transformation programs (Triani et al., 2023).

Digitalization improves financial performance of small and medium-sized enterprise (SMEs) by increasing access to digital finance and marketing tools. SMEs who use digital technologies in finance and marketing see large financial gains (Audrey et al., 2023) . Similarly, digital financial innovations like mobile banking and online financing benefit Nairobi's SMEs, increasing their competitiveness in the digital economy (Ken Musa & Wanjiru Njeru, 2023).

State-owned enterprises (SOEs) benefit the most from digital transformation since it boosts financial performance through improved operational capabilities. Digital transformation in publishing firms improves financial performance by facilitating organizational and mode transformations (Ma & Zhou, 2024). Financial digital transformation also improves management levels and value-creation capacities (J. Liu et al., 2023). SOEs can use digital technologies to streamline operations, cut costs, and improve service delivery—all of which contribute to increased profitability.

Transparency and governance play additional roles in mediating the relationship between digitization and financial performance. SOE's political links frequently promote government support, which can improve financial outcomes, particularly during crises like as the COVID-19 epidemic (Xu & Jin, 2022). This shows that strong governance frameworks enhance the benefits of digital transformation by allowing for effective adoption of digital practices.

Digital finance is also crucial in enhancing the financial performance of state-owned enterprises. Digital transformation improves external financial allocation efficiency while increasing internal productivity, enabling SOEs to better manage resources (Li & Zhao, 2024). Financial technology plays an important role in

improving information identification and screening, allowing SOEs to make better investment decisions and reduce financial mismatches (Gao & Jin, 2022).

Financial ratios are critical instruments for evaluating the financial performance of enterprises across many sectors. These ratios offer insights into a company's profitability, liquidity, solvency, and efficiency, facilitating informed decision-making by stakeholders. The classification of financial ratios into specific categories—profitability ratios, liquidity ratios, solvency ratios, and efficiency ratios—enables a thorough assessment of a company's financial condition (Dithisari & Hartika, 2024). Not only private companies, but those financial ratios are also very insightful to assess and evaluate SOEs, such as PT Garuda Indonesia (Prissia & Daryanto, 2019) and Perusahaan Gas Negara (Hasiholan & Daryanto, 2018)

Digital Activities, such as the use of Social Media Marketing Activities, has an effect of 75,1% towards purchase intention (Daud, 2021). Therefore, digitalization offers a transformative chance to improve financial performance in a variety of industries. Organizations can make considerable financial gains by increasing operational efficiency, enhancing governance, and using digital finance. However, successful adoption necessitates strategic leadership, cultural alignment, and a balanced strategy to avoid the dangers of excessive digitalization.

It is fair to say that PLN is a single sole State-Owned Enterprise in electricity industry, who is responsible providing electricity all the way from generation to retail. At the same time, PLN is at a crossroads, facing both massive challenges and previously unimaginable opportunities. Geographic restrictions, rapidly expanding demand, evolving regulation, and the urgent need for sustainable energy solutions all contribute to this complex environment.

Historically, PLN's growth has resulted in a particular market structure in which it continues to have a dominant position while gradually enabling private sector participation. Combining that condition is a challenge for the company. This shift is the result of the government recognizing that large investments and innovative solutions are required to meet the country's growing energy demands.

The industry is dealing with a variety of issues. Indonesia's archipelagic terrain creates logistical challenges for power delivery, and the drive to integrate renewable energy sources adds financial and technological challenges. However, there are also a lot of opportunities to offset these difficulties. The government's aggressive goals for the adoption of renewable energy and electrification are stimulating innovation and investment in the industry.

New resources and experience are being brought in by the growing openness to private sector involvement. Most importantly, the digital revolution is providing fresh approaches and instruments to tackle persistent problems with asset management, customer service, and efficiency. Despite all the challenges, The Company still manage to deliver the electricity throughout Indonesia. In 2016-2024, the Electrification Ratio in Indonesia keeps increasing, as shown in Figure 1.1.

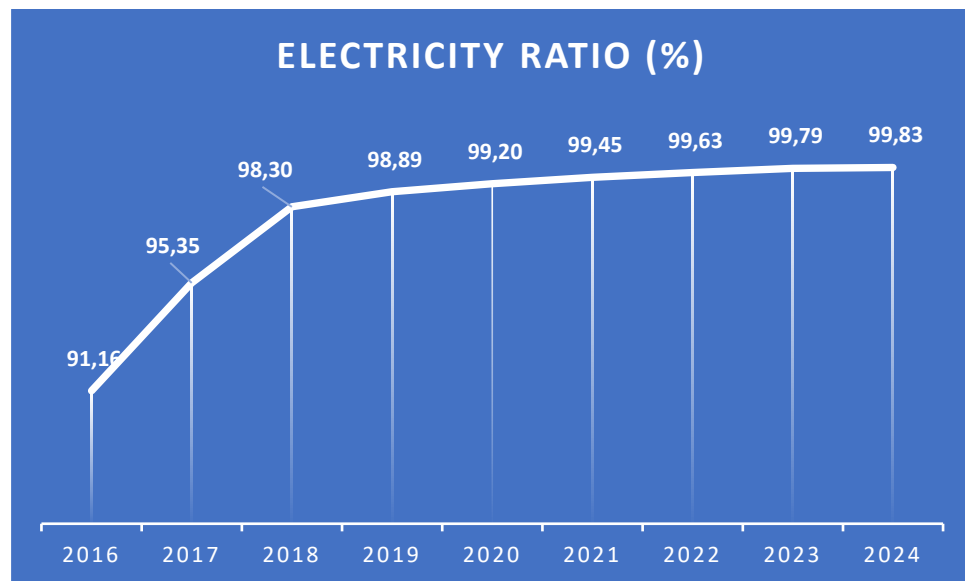


Figure 1.1: Indonesia's Electricity Ratio 2016-2024

Source: PLN Statistical Report 2016 - 2024

The Company's Mobile Application and other efforts that have exemplified Company's digital transformation journey are a strategic reaction to these industry changes. In particular, the mobile application is a concrete example of the business's attempts to adjust to shifting customer demands and technology advancements. The

Company hopes to increase operational effectiveness, boost consumer engagement, and maybe generate new revenue sources by utilizing digital technologies.

Furthermore, there is ongoing concern about finding a proper balance between providing affordable electricity through subsidies and ensuring the PLN's financial health. It is very crucial to find the right combination for the company needs. This study presents a performance analysis methodology that integrates industry context and corporate strategic goals.

1.2 Company Background

In accordance with the Government's policy to facilitate private sector participation in the electricity supply industry, PLN's status has transitioned from a Public Company to a Limited Liability Company (Persero) since 1994, while also serving as a PKUK in delivering electricity for public interest to the present day. Today, PLN operates under the strict oversight of six ministries in its business activities. Table 1-1 briefly explains PLN subject matter of coordination in ministries.

Table 1.1: Ministries to Coordinate

No.	Ministry	Coordination and Responsibilities
1	PT Danantara Asset Management	Company's Shareholder
2	Ministry of Energy and Mineral Resources	Ensures sustainable energy development and controls power rates and energy policies.
3	Ministry of State-Owned Enterprises	Oversees PLN's performance, corporate governance, and strategic orientation as a state organization.
4	Ministry of Finance	Oversees the budgetary assistance, financial policies, and subsidies pertaining to PLN's activities.
5	Ministry of Environment and Forestry	Guarantees that PLN complies with sustainable practices and environmental requirements.
6	Ministry of National Development Planning (BAPPENAS)	Coordinates PLN's operations with national development objectives and infrastructure planning.
7	Coordinating Ministry for Maritime Affairs and Investment	Facilitates investment in energy infrastructure and integrates maritime and energy policies.

Source: Data Process, 2026

As an SOE, PLN is obligated to comply with regulations issued by the Ministry of SOE. One of those regulations is Ministerial Decree number KEP-100/MBU/2002 regarding to the assessment of the health level of state-owned enterprises. Despite the years, this decree is still considered to be related to the condition regarding the financial performances.

PLN, which is a key player in the Indonesian electrical sector, is dedicated to facilitating the energy transition to attain the net zero emission goal by 2060. At the conclusion of 2022, PLN finalized the creation of Holding and Sub-Holding to optimize its potential through transformation into a streamlined, agile, and efficient organization. Based on the Figure 1.2, through the last 8 years, PLN's number of customers are keep increasing. In 2024, it reached over 92 million customers.

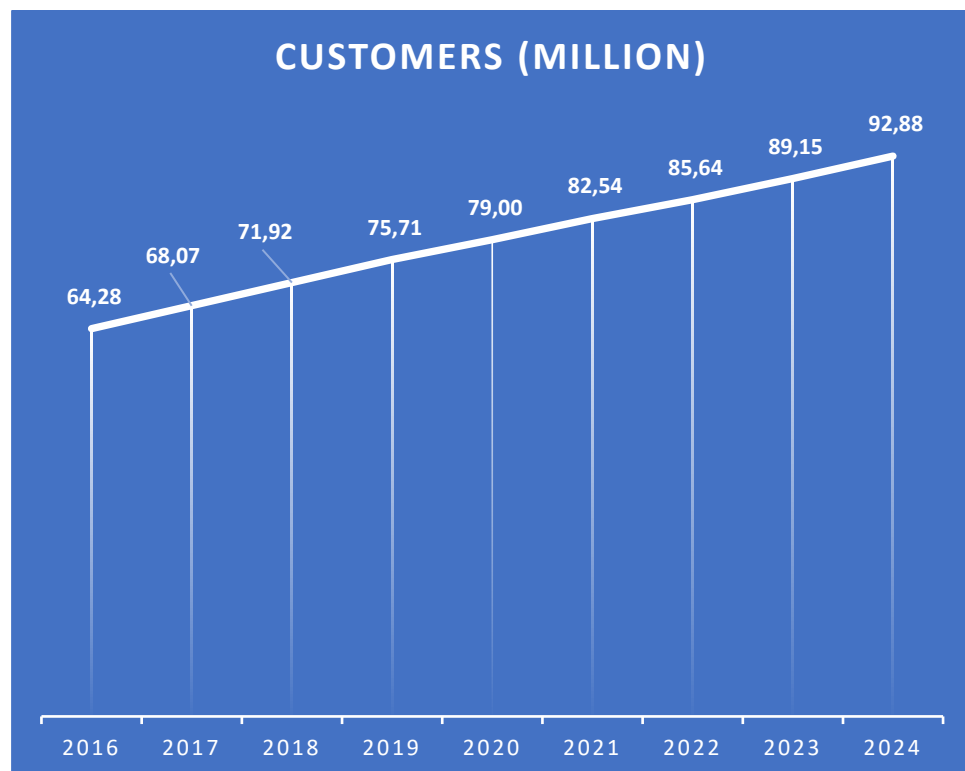


Figure 1.2: The Company's Customer in 2016 - 2024

Source: PLN Statistical Report 2016 – 2024

Surely, for any company with that number of customers, living on archipelago of over 17 thousand islands, customers satisfaction can be a real challenge. Despite the challenge, the company still managed to deliver the energy sales improving

within those years. As shown in Figure 1.3, the energy sales made by the company from 2016 to 2024 was increasing, reached more than 306 Tera Watt Hour.

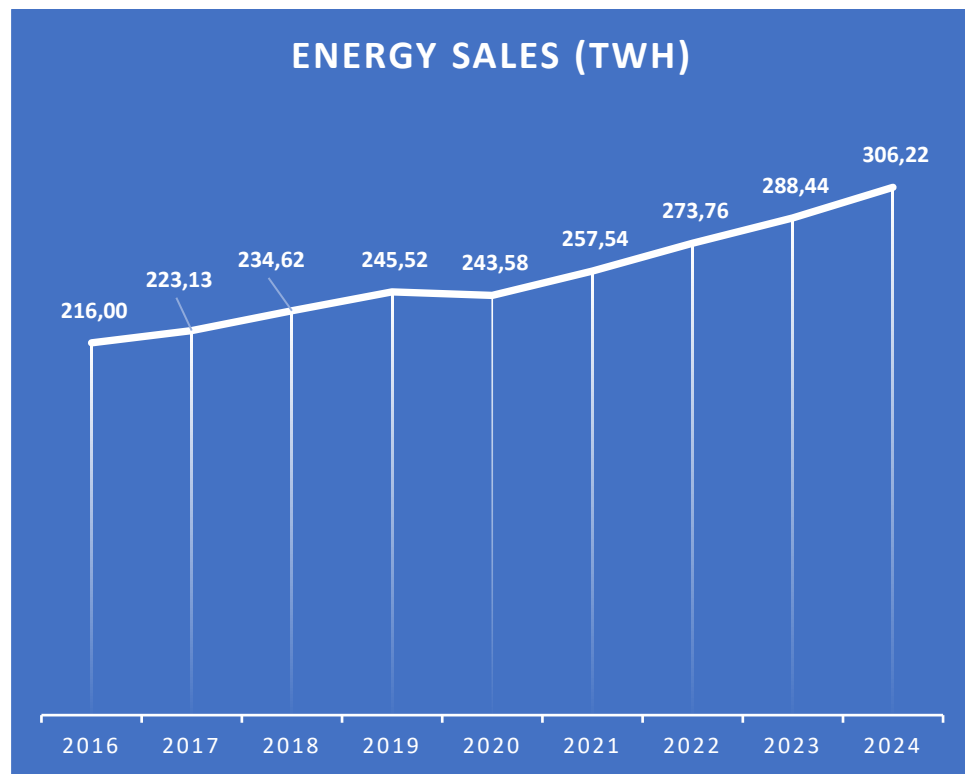


Figure 1.3: PLN's Energy Sales in 2016 - 2024

Source: PLN Statistical Report 2016 – 2024

To obstacle that kind of challenge, Digitalization is the right prescription. PLN initiated its digital transformation on April 21, 2020, in accordance with its overall transformation, which includes four key aspirations: green, lean, innovative, and customer focused. The digitalization of internal business processes and services at PLN has effectively improved customer experiences and increased business process efficiencies by Rp16.7 trillion. (PLN, 2023).

That amount is also contributed by PLN's mobile application, launched on December 20, 2020, (PLN, 2020). The latest version, New PLN Mobile, is being under continuous development as a Super App that integrates PLN's business processes and functions as a comprehensive service platform for community needs, including electricity services, electric vehicles, and internet access.

Finally, PLN Struggling for digitalization is paid off. In 2023, The Company won 11 awards on a prestigious event. For the cherry on top, The Company's CEO won The Best CEO For Corporation Digital Transformation of The Year 2023 on that event.

Dirut Raih Best CEO Digital Technology & Innovation Award 2023, PLN Group Borong 11 Penghargaan Inovasi Digital

Bagikan:  



Figure 1.4: The Best Digital Award in 2023

Source: Siaran Pers PLN-<https://web.pln.co.id/cms/media/siaran-pers/2023/03/dirut-raih-best-ceo-digital-technology-innovation-award-2023-pln-group-borong-11-penghargaan-inovasi-digital/>

By the end of January 2025, the new PLN Mobile app had reached a real milestone, hitting over 47 million downloads with a standout 4.9-star rating from its users. These numbers didn't just look good on paper; they made it one of the top-performing public service apps across the entire Google Play Store in Asia. It's a success story that clearly resonates with people, and it's even been highlighted in industry circles for its impact on digital service delivery. (Harvard Business Review, 2023).

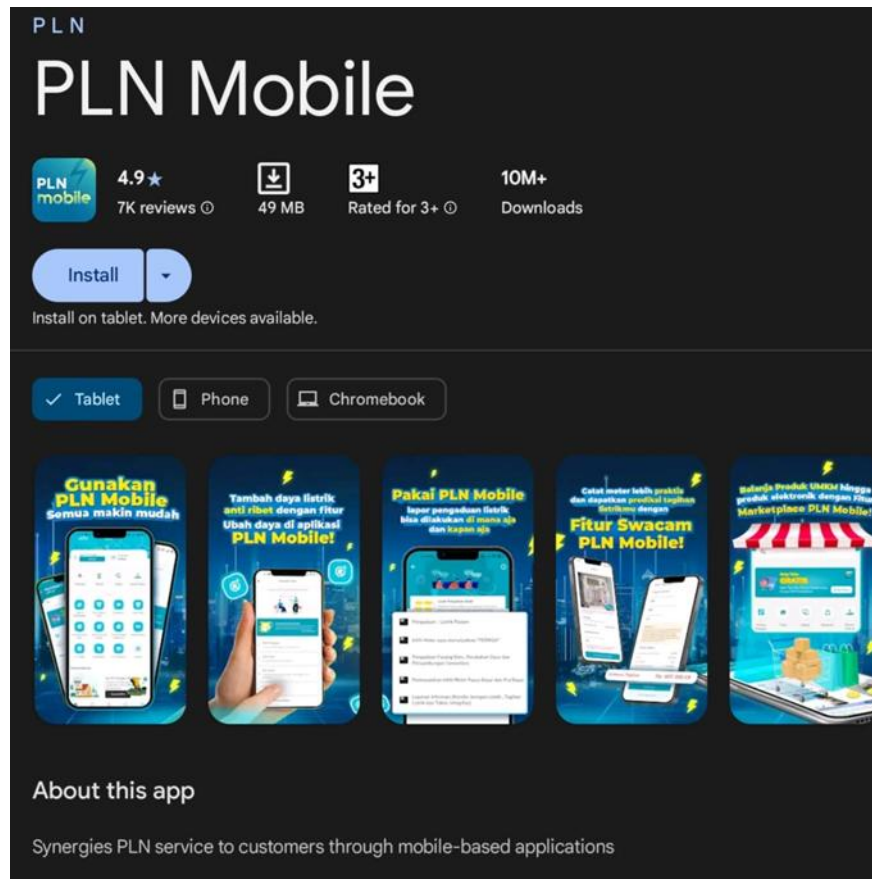


Figure 1.5: PLN Mobile on Google PlayStore

Source: Google PlayStore

1.3 Financial Ratios

Financial ratio analysis is an important tool for evaluating the financial performance of firms across many industries. This analytical method involves calculating and interpreting ratios obtained from financial accounts, which provide information about liquidity, solvency, profitability, and operational efficiency. Financial ratios are important because they provide a comparative view of a company's financial health, allowing stakeholders to make more informed decisions (Sembel, 2025).

Liquidity ratios, including the current ratio and quick ratio, assess a company's capacity to meet short-term obligations. These statistics are critical for determining a company's short-term financial viability and operational efficiency.

For example, Siahaan emphasizes the importance of liquidity ratios for cooperatives to guarantee they can meet urgent financial obligations (Siahaan et al., 2023).

Similarly, Listanti outlines how liquidity ratios assess a company's ability to satisfy short-term responsibilities, showing its financial performance (Listanti et al., 2024). Azhar emphasizes the importance of liquidity, stating that financial measures reveal a company's liquidity and profitability strengths and weaknesses (Azhar & Abd Rahim, 2024). Liquidity plays an important role in a company's sustainable.

Solvency ratios, which examine a company's long-term financial health, are just as significant. Rudi emphasizes the importance of solvency ratios in assessing a company's financial position and ability to sustain operations over time (Rudi & Habiburrahman, 2024). Furthermore, solvency ratio analysis can be used to analyse a company's financial independence and ability to manage its obligations (Wandari et al., 2021).

Profitability ratios, such as return on assets (ROA) and return on equity (ROE), are critical in determining a company's potential to make profit based on its resources. For example, Najjar's research shows that profitability ratios disclose considerable disparities in financial management methods among banks, which can be used to inform best practices in profitability management (Najjar, 2013).

Similar, Kurniani also underlines the importance of profitability ratios in evaluating management performance, relating them directly to profit generating (Kurniani, 2021). This link between profitability and financial performance is critical for stakeholders seeking to assess a company's success in generating returns on investment. These ratios provide information on operational efficiency and overall financial performance.

1.4 Research Gap

Recent study has been conducted on how digital application impacts a business in PKU Muhammadiyah Surakarta Hospital. Digitalisation impacted at least four things: Strategic Decision Making, Investment in Digital Technology, Training and development, and Change/Transformation Management. It has

implemented digital application and resulting positive in term of the financial performances (Arfian, 2024)

Several research had been conducted regarding to the PLN Mobile Application. Harvard., (2023) made research about how the Mobile Application transform PLN and at the same time saved the company's reputation. The mobile application was then discovered to be very useful boost the customer satisfaction.

Locally, (Widuri & Widodo, 2023) made research about the PLN Mobile application for effectivity in customer service in Medan, North Sumatra of Indonesia. The Mobile application was very helpful to bridge the communication gap between customers and PLN Delitua Medan. Similar to that, Putra & Barusman., (2024) made research on the usage of the application to reach the customer satisfaction. The research result was that the Mobile Application has a significant effect on customer satisfaction.

In the context of digital applications, the banking industry also has a similar application, known better as mobile banking. (Adhitya, 2020a) made research about the impact of Mobile banking on the financial performance and stock performance of several big banks. The research was concluding that the mobile banking had a different various impact on both financial performance and stock performance.

All research about PLN Mobile application mentioned above, all of them were focused on how the application can support the customers satisfaction. None of them were focused on the application influence the company's financial performances. Therefore, this research were conducted to study how digitalisation influence the company's financial performances.

1.5 Problem Identification

The Figure 1.6 provide description on the customers receivables. In 2016 to 2019, the number of customers receivables are keep increasing, reaching more than 15% (PLN, 2024). Furthermore, in 2019 the world was under strike by the pandemic of Covid-19. Therefore in 2020, the Company decided to launch PLN Mobile Application.

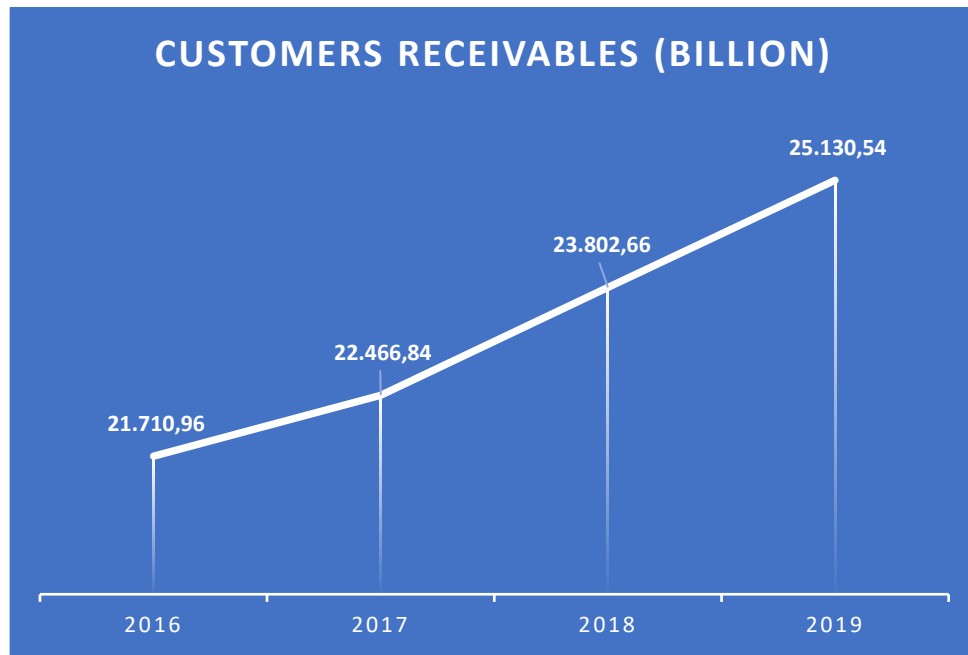


Figure 1.6: Customers Receivables

Source: PLN Financial Statement 2016 - 2019

A close monitoring on the Financial Ratios is important for the company to determine whether any policy or any action is still aligned with the corporate original purposes. Many firms fail to quantify the benefits of digital efforts, which creates ambiguity in strategic decision-making. This thesis purposes to analyse, evaluate and assess PLN's financial health based on financial ratios or financial performance before and after the launching of PLN mobile application.

1.6 Research Questions

Based on the research gap mentioned above, to assess how the company's financial were impacted by the digital application, the MSOE decree No: KEP-100/MBU/2002 stated that there are four performances related to financial performance that can be evaluate. There are profitability performance, liquidity performance, activity performance and solvency performance. To complete those performances, this research will also add a financial health indicator using Altman Z-Score. Therefore, these questions below will be addressed:

1. How is PLN profitability performances after the implementation of PLN mobile application better compared to before the implementation of PLN mobile application?

2. How is PLN liquidity performances after the implementation of PLN mobile application better compared to before the implementation of PLN mobile application?
3. How is PLN activity performances after the implementation of PLN mobile application better compared to before the implementation of PLN mobile application?
4. How is PLN solvency performances after the implementation of PLN mobile application better compared to before the implementation of PLN mobile application?
5. How is PLN financial health after the implementation of PLN mobile application better compared to before the implementation of PLN mobile application?

1.7 Research Objectives

Based on research question above, below are the research objectives.

1. To measure, analyse, evaluate and compare PLN profitability performances before and after the implementation of PLN mobile application.
2. To measure, analyse, evaluate and compare PLN liquidity performances before and after the implementation of PLN mobile application.
3. To measure, analyse, evaluate and compare PLN activity performances before and after the implementation of PLN mobile application.
4. To measure, analyse, evaluate and compare PLN solvency performances before and after the implementation of PLN mobile application.
5. To measure, analyse, evaluate and compare PLN financial health before and after the implementation of PLN mobile application.

1.8 Research Benefits

1.8.1 Theoretical Benefit for Academic Contribution

Evidence for Digital Transformation in Utilities: This study offers empirical evidence that digital transformation (DT) serves as a catalyst for financial recovery, particularly within monopolistic, state-owned utility sectors.

Confirmation of the Resource-Based View (RBV): This research contributes to the RBV theory by showing that a digital interface (PLN Mobile) is a strategic asset that improves the internal financial structures.

Testing the Altman Z-Score Methodology: This research employs the Altman Z-Score model, with data from 2016Q2 to 2025Q2, to prove that the bankruptcy prediction model for major Indonesian State-Owned Enterprises (BUMN) is correct.

1.8.2 Practical & Operational Benefits For the company

Liquidity Optimization: The research examines that the digital collection cycles will may or may not reduce the collecting period (COP) which means more cash into the company.

Financial Health Stabilization: By using Atman Z Score, this study will evaluate how the company's financial performance throughout the research timeline.

Efficiency-Driven Investment. This research employs DuPont Analysis to evaluate how growth is drive.

1.8.3 Policy & Social Benefits for Government & Stakeholders

Mitigation of fiscal risk: This research will evaluate the financial health of the company in order to determine how the government supports the company's fiscal or vice versa.

The State-Owned Enterprise Digital Blueprint: This research will assess whether this thesis's result may be applied to other sectors, such as water, transportation, logistics, etc.

Stakeholder Reliability: This research will evaluate the financial health of the company to determine the Customers and suppliers' trust regarding to the utility business ability to pay contractors and maintain the power system.

1.9 Research Scope

The research is about analysing, evaluating and assessing PLN's Financial Statements between 2016 – 2024 through several financial ratios, before and after the implementation of the PLN mobile application.

1.10 Limitation

This study was conducted several years after PLN Mobile application was launched. The data period used for this study are entirely internal, quantitative between 2016 – 2024 and completely extracted from the PLN's publication via the official website (secondary data).

1.11 Structure of Thesis

This thesis consists of five chapters. Each chapter is discussing as follows:

Chapter I:

An introduction, which provides an overview of the background, problem identification, research gap, research question, research objective, research benefit, research scope, and research structure.

Chapter II:

A literature review, which reviews related theories and research on digital transformation, financial performance, and the Company.

Chapter III:

A research methodology, which explains the design, population, sample, variables, instruments, data collection techniques, and data analysis techniques used in this study.

Chapter IV:

The results and discussion, which presents and interprets the research findings and discusses the theoretical and practical implications.

Chapter V:

Conclusion and suggestion, which summarizes the whole research, provides suggestions for further research, and conveys limitations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The assessment of corporate stability and performance is significantly influenced by financial ratio analysis, which also offers valuable insights into operational efficiency and informed investment decisions. In this literature review, the results of recent studies that have investigated specific financial ratios, including the collection period, inventory turnover, total asset turnover, return on equity (ROE), return on investment (ROI), cash ratio, current ratio, and total equity to total asset ratio, are consolidated. Combining these ratios reveals critical components of a company's financial health and operational efficacy.

Furthermore, recent research is investigating the extent to which technology influences the profitability of any business entities. The findings suggest that the implementation of technology will improve banks' financial performance in terms of their liquidity and capital adequacy. It is essential that banks implement technological advances more quickly to become more competitive with competitors and respond to a market that is currently changing (Adhitya, 2020).

To measure the performances and healthy level of SOEs, The Ministry of SOE issued a decree No: KEP-100/MBU/2002 dated June 4, 2002, about Assessment on Healthy Level of State-Owned Enterprises to evaluate and determine the health level of an SOE (Ministry of State-Owned Enterprise, 2002). Table 3.1 elaborate more on the performances measured.

Table 2.1: Performance Measured

No.	Measurements	Ratios
1	Profitability Performances	Return on Equity
2		Return on Investment
3	Liquidity Performances	Cash Ratio
4		Current Ratio
5	Activity Performances	Collection Period
6		Inventory Turnover
7		Total Asset Turnover
8	Solvency Performances	Total Equity to Total Asset

Source: MSOE decree No: KEP-100/MBU/2002

2.2 Financial Ratio Analysis

2.2.1 Return on Equity (ROE)

Management's utilization of shareholders' equity to generate profits is evaluated by the Return on Equity (ROE), which is a critical metric. ROE is susceptible to a variety of external factors, such as macroeconomic hazards and financial investments, which emphasizes its complexity and dependence on external conditions. The study's examination of the efficacy of financial instruments in the insurance sector proved that various categories of investments have a substantial impact on ROE, with empirical results corroborated this correlation (Thair et al., 2023).

Moreover, Porwal emphasizes the importance of investors comprehending ROE in relation to cash management ratios, asserting that effective cash management practices can increase ROE by enabling firms to reinvest promptly in value-generating projects (Porwal, 2022). Based on the SOE's decree, the ROE's formula is shown in Table 2.1.

Table 2.2: Description about ROE

Ratio	Definition	Indicator
Return on Equity (ROE)	It evaluates the efficiency with which management is utilizing equity financing to generate profits.	$ROE = \frac{\text{Profit after Tax}}{\text{Total Equity}} \times 100\%$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.2 Return on Investment (ROI)

The Return on Investment (ROI) is a term that is frequently employed to assess the profitability of investments in a variety of sectors. More research demonstrates that ROI can be precisely aligned with return on invested capital in manufacturing environments, thereby bolstering its multifaceted nature across industries (Tram Le & Huong Le, 2023). In addition, Wang., (2021) comparative analysis of internal rate of return (IRR) and net present value (NPV) methodologies underscores the complexity of the decision-making processes that rely on ROI metrics in capital investments.

Based on the MSOE's decree the ROI's formula is shown in Table 2.2.

Table 2.3: Description about ROI

Ratio	Definition	Indicator
Return on Investment (ROI)	This ratio assesses the effectiveness of an investment by comparing the financial gain to its cost.	$ROI = \frac{\text{Profit after Tax}}{\text{Capital Employed}} \times 100\%$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.3 Cash Ratio

The Cash Ratio (CR) is a key indicator of a company's capacity to fulfil its short-term obligations through cash and cash equivalents. Cabildo et al., (2022) have demonstrated the significance of CR in their research, which establishes a correlation between effective cash management practices and enhanced financial performance in the retail sector. This work highlights the significance of CR as an independent variable that affects a variety of performance ratios, including ROE.

Rashid et al., (2022) further elaborate on the issue of optimal cash holding levels, asserting that profitability is directly correlated with the maintenance of an appropriate CR. They base their argument on data from publicly traded companies. Ultimately, these findings imply that improved investment outcomes can be achieved by reducing the risks associated with fluctuating market conditions using stronger liquidity. Based on the SOE's decree, the Cash Ratio's formula is shown in Table 2.3.

Table 2.4: Description of Cash Ratio

Ratio	Definition	Indicator
Cash Ratio	This liquidity ratio assesses an organization's capacity to service its short-term obligations through its cash and cash equivalents.	$Cash Ratio = \frac{\text{Cash} + \text{Bank} + \text{Short Term Securities}}{\text{Current Liabilities}}$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.4 Current Ratio

The current ratio, a liquidity metric, evaluates a company's capacity to satisfy short-term obligations with current assets. The significance of both conventional

liquidity ratios, such as the Current Ratio and Cash Flow ratios, in assessing the financial health of companies in a variety of sectors is highlighted by Billah et al., (2014). According to their research, it is recommended that these metrics be employed in conjunction to evaluate the overall liquidity and operational efficiency of an organization, which in turn influences the decision-making processes and investor confidence.

In a thorough examination, it is demonstrated how cash flow statement metrics, such as the Current Ratio, can improve predictions of business failure, thereby providing stakeholders with an additional layer of risk assessment. Based on the SOE's decree, the Current Ratio's formula is shown Table 2.4.

Table 2.5: Description of Current Ratio

Ratio	Definition	Indicator
Current Ratio	It is a liquidity ratio that evaluates a company's capacity to service its short-term obligations with its short-term assets.	$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.5 Collection Period or Account Receivables Turnover (ARTO)

The Collection Period or Account Receivables Turnover (ARTO) and Inventory Turnover are also critical indicators of operational efficiency. The Collection Period is a measure of the duration it takes for a company to collect its receivables, which impacts its liquidity and cash flow. Bohdalová & Greguš., (2016) emphasize the importance of efficiently managing the Collection Period to maintain operational viability and optimize cash flows in their discussion.

Reducing the Collection Period enables organizations to speed up the process of re-investing their funds back into their primary business activities. This approach is directly applicable to PLN, who must prioritize the creation of more accessible and user pleasant payment solutions for its clients. The formula to be used for the calculation of the Account Receivables in this context is explained in Table 2.6.

The improvement of these payment procedures is needed in order to optimize the entire company's liquidity and financial velocity. By streamlining transactions, PLN can successfully reduce the administrative barriers that now slow down the receipt of funds. Table 2.6 presents the data that can be used to assess the effect of these improvements on the receivable cycles of the business.

Table 2.6: Description of Account Receivables Turnover (ARTO)

Ratio	Definition	Indicator
Account Receivables Turnover (ARTO)	this ratio represents the average number of days it takes for a company to collect payment following a sale.	$\text{ARTO} = \frac{\text{Total Account Receivables}}{\text{Total Income Revenue : 365}}$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.6 Inventory Turnover

In contrast, Inventory Turnover quantifies the rate at which inventory is sold, a factor that can have a substantial impact on a company's ultimate profitability. Gill and Shah's observations emphasize the direct correlation between enhanced cash management and high inventory turnover, indicating that effective inventory practices not only enhance the firm's financial performance and liquidity but also reduce costs (Gill & Shah, 2011). Based on the SOE's decree, the Inventory Turnover formula is shown in Table 2.6.

Table 2.7: Description of ITO

Ratio	Definition	Indicator
Inventory Turnover (ITO)	This ratio quantifies the efficiency with which a company discards of its inventory over a specified timeframe.	$\text{ITO} = \frac{\text{Total Inventories}}{\text{Total Income Revenue}} \times 365 \text{ days}$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.7 Total Asset Turnover

Another key element of financial ratio analysis is Total Asset Turnover, which quantifies the effectiveness of a company in leveraging its assets to generate revenue. TATO is important for assessing a company's operational effectiveness because research shows that it typically has a positive link with financial performance metrics like Return on Assets (ROA) and Net Profit Margin (NPM)

(Al-Shattarat, 2022). Based on the SOE's decree, the Total Asset Turnover formula is shown in Table 2.7.

Table 2.8: Description of TATO

Ratio	Definition	Indicator
Total Asset Turnover (TATO)	A company's capacity to generate revenue from its assets	$TATO = \frac{Total\ Revenue}{Capital\ Employed} \times 1$

Source: MSOE decree No: KEP-100/MBU/2002

2.2.8 Total Equity to Total Asset

On the other hand, the Total Equity to Total Asset ratio offers some insight into a company's financial leverage and risk exposure by indicating the percentage of assets that are financed through shareholders' equity. Li & Zhao., (2024) research suggests that organizations with higher equity ratios are more likely to attract investment and have lower risk profiles as a result of their perceived consistency. Based on the SOE's decree, the Total Equity to Total Asset formula is shown in Table 2.8.

Table 2.9: Description of TETA

Ratio	Definition	Indicator
Total Equity to Total Asset (TETA)	This ratio quantifies the percentage of a company's assets that are financially supported by shareholders' equity.	$TETA = \frac{Total\ Equity}{Total\ Asset} \times 100\%$

Source: MSOE decree No: KEP-100/MBU/2002

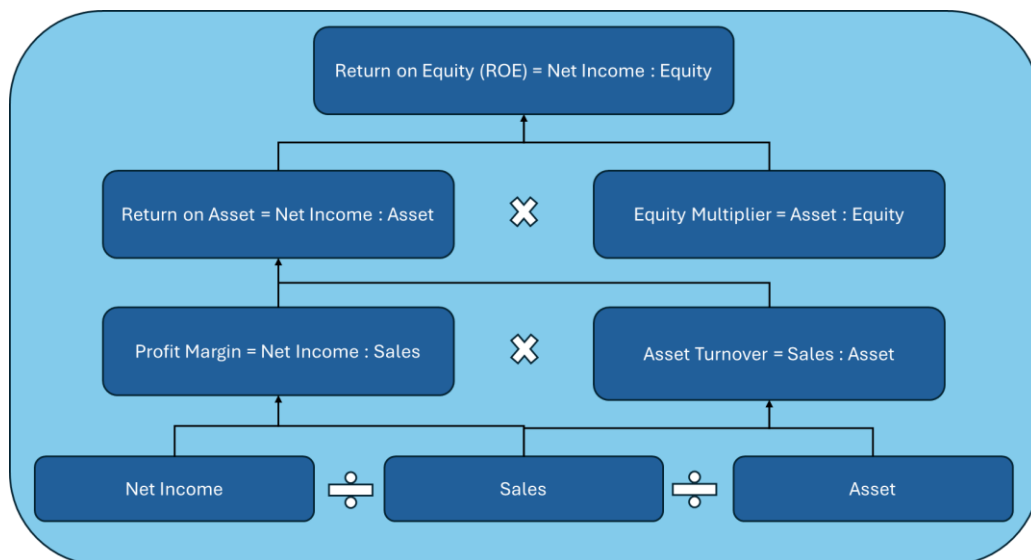
2.3 Dupont Analysis

In 1919, Du Pont Corporation introduced a revolutionary approach to performance analysis that has been referred to as "du Pont analysis" ever since. The Du Pont System Analysis is a comprehensive analysis that examines all activity ratios and profit margins associated with a sale in order to demonstrate the impact of those ratios on profitability (Shahnia, 2020). The Dupont Analysis is a powerful financial analysis tool that analyses a company's return on equity (ROE) into components to assess how well it performs financially.

This strategy assists stakeholders identify on which factors provide a business profitable and efficient. So that later a corporation decision can be made based on those factors analysis. The three-step Dupont examination examines at three significant financial indicators: Net Profit Margin (NPM), Total Asset Turnover (TAT), and Equity Multiplier (EM) (Anggraini & Febrianty, 2022)

The DuPont Analysis framework breaks down the return on equity into three main financial ratios, illustrated in Figure 2.1 below (Parzonko et al., 2023). To determine the profit margin, divide net income by revenue. To identify the total asset turnover, divide revenue by total assets. Last but not least, the Equity Multiplier is the ratio of Total Assets to Equity, indicating how much debt the company has.

Figure 2.1: Dupont Model



Source: Parzonko, 2023

Profit margin is an indicator to measure how efficiently a business operates, implying the amount of profit the corporation keeps for every rupiah of electricity it sells. The equity multiplier reveals how much debt is being utilized to buy assets and measures financial leverage. The ratio of profit after tax to the number of investment or asset is known as the Return on Assets, or Return on Investment.

The Return on Assets (ROA) is an indicator that evaluates the capacity of capital to produce net profits when it's invested in assets (Harahap, 2018).

Harahap, (2018) also states that the Du Pont system presents data regarding a variety of variables that may create changes in a company's financial performance. While the method is nearly identical to the analysis of conventional financial statements, the approach is more integrative and incorporates the composition of financial statements as a component of the analysis.

2.4 Altman Z-Score

the Altman Z-Score functions as a robust forecasting instrument in finance for evaluating a company's probability of bankruptcy. Formulated by Edward Altman in the 1960s, the Z-Score integrates various financial ratios into a singular composite score, enabling analysts to categorize organizations based on their financial health: safe, grey (ambiguous), and distress (risk of bankruptcy) (Mishra et al., 2019); (Bochicchio et al., 2023). The model includes five essential financial ratios, including working capital to total assets and retained earnings to total assets, weighted by coefficients obtained from empirical data.

The utilization of the Z-Score model allows stakeholders to make informed decisions regarding the financial stability of enterprises, especially in changing economic conditions (Fonseca et al., 2021). Recent research has validated the predicted accuracy of the Z-Score in several contexts, including the manufacturing sector and banking institutions, reinforcing its significance in evaluating financial distress across numerous industries (Nengsih, 2024).

According to (Opuni-Frimpong, 2019), the Altman Z-score model featured various formulas for different industries and companies. PLN is considered to be a listed company, because it has issued several bonds series, both local and international. Therefore, The Altman's Z-score model for non-manufacturing enterprises is described below.

$$Z'' = 3,25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

where:

X_1 = Working capital/Total assets

X_2 = Retained Earnings/Total assets

X_3 = Earnings before interest and taxes/Total assets

X_4 = Market value of equity/Total liabilities

Z'' = Overall index

Altman Z-score calculation results can be classified into the following zones:

Table 2.10: Altman Z-Score result category

Results	Category	Description
$Z > 5.85$	Safe Zone	The Company is in the safe zone and bears little risk of bankruptcy
$4.15 \leq Z \leq 5.85$	Grey Zone	The company is in the gray zone and bears a moderate chance of falling bankrupt
$Z'' < 4.15$	Distress Zone	The company is in the distress zone and at significant danger of bankruptcy

Source: Opuni-Frimpong, 2019

2.5 Normality Test

Normality testing is initially essential because it determines whether the data correlates with a normal distribution. It is an essential precondition for various parametric statistical methods, such as the Paired t-test. This testing can be conducted using several statistical methods, including the Shapiro-Wilk and Kolmogorov-Smirnov tests, which are commonly utilized in research to validate the normality assumption (Kwak & Park, 2019), (Hagag, 2021).

The Paired t-test is an appropriate tool for analysing means from two related samples when the data matches a normal distribution. It evaluates if an intervention or treatment is responsible for a statistically significant difference (Kwak & Park, 2019). In the event of a lack of normality, one has to apply non-parametric tests such as the Wilcoxon signed-rank test, which, though less powerful, do not necessitate the assumption of normality (Mishra et al., 2019) (Hagag, 2021).

2.6 Paired t-test

A parametric statistical method for evaluating two means from similar groups is the Paired t-test. It evaluates the possibility of significant differences between pre- and post-intervention measurements or among observations from the same

patients. The application depends entirely on the assumption of normality for the differences between paired measurements.

Failure to meet this assumption can result in inaccurate results; therefore, a normality test before employing the Paired t-test is required (Varela-Olalla et al., 2024; Nwankwo et al., 2021). Literature that analyses the application of the method in many kinds of sectors also emphasizes its reliability, illustrating its adaptability in both clinical and non-clinical research (Varela-Olalla et al., 2024; Pujianto et al., 2022). The Paired t-test and Bland-Altman plots, for example, have been used in research to examine measurement biases in biomechanical assessments, highlighting the need for rigorous statistical techniques to draw reliable conclusions about observed phenomena (Varela-Olalla et al., 2024; Nwankwo et al., 2021).

2.7 Wilcoxon Test

The Wilcoxon test is a non-parametric statistical test useful for analysing ordinal or continuous data. Unlike parametric tests such as the student's t-test, the Wilcoxon test does not assume that the data is regularly distributed. Thus, it is an important tool for dealing with parameters that do not fit the rigorous assumptions of normalcy, but that are at least ordinally scaled (Du Prel et al., 2010).

The Wilcoxon method, being a "rank test", does not compute directly with the raw observed values. Instead, the data points are ranked according to size and allocated rank numbers which constitute the basis of the test variable. While parametric tests are frequently more powerful than non parametric tests, their power drops dramatically when the criteria are not fully satisfied, on the other hand the Wilcoxon test is for non normally distributed data.

2.8 Digital Impact on Financial Performance

New studies are looking at how technology affects the profitable abilities of a company (Adhitya, 2020). Transforming to digital significantly improves financial success in many sectors, such as publishing, manufacturing, and banking. Basically, it is fair to say that sky is the limit

Ma and Zhou's important study looked at China's A-share listed publishing companies and showed that digital transformation has a good effect on financial performance, especially when it comes to digital transformation modes and

organizational changes (Ma & Zhou, 2024). Also, (Ren & Li, 2023) proved that the stage of digital transformation leads to big improvements in financial metrics. For example, better inventory turnover and asset management are linked to higher levels of digitalization. According to them, this result agrees with other research that has found a strong link between digital businesses and how well they do financially.

Kurniawan & Viriany., (2023) analysed the interaction of corporate governance within SOEs, finding that stronger governance structures could mediate the beneficial effects of digitalization on financial results, highlighting how strategic oversight supports innovation and operational efficiency. Furthermore, state-owned businesses were more financially stable during the COVID-19 pandemic than private businesses. This is partly because they had easier access to government support, which can make investments in digitalization and innovation easier (Xu & Jin, 2022).

CHAPTER 3: METHODOLOGY RESEARCH

3.1 Introduction and Data Source

This research methodology utilizes a comparison examination of the financial ratios both before and after the PLN Mobile implementation at PLN from 2016 to 2024. The data population consists of the semi-annually financial report of PLN. The sample to be analysed consists of the semi-annually reports from three years prior to and three years after the implementation of digital transformation at PLN.

All data are secondary data and published on the PLN's official website. After that, the data is analysed using financial ratios, which include the liquidity, solvency, activity, and profitability ratios. Subsequently, eight financial ratio computations were acquired, specifically: ROI, ROE, Cash Ratio, Current Ratio, Account Receivables Turnover, Inventory Turnover (ITO), Total Asset Turnover (TATO) and Total Equity to Asset Ratio (TETA).

3.2 Research Design

This study used a quantitative exploratory design that uses data in the form of statistics or numbers to test hypotheses and provide responses to research questions. This research will employ a quantitative design. The Company's financial performance such as Profitability ratio, Liquidity ratio, Activity ratio, and Solvency ratio, will be evaluated based on the Ministry of State-Owned Enterprise Decree: KEP-100/MBU/2002, as briefed in Table 2.1.

3.3 Research Framework

The research framework incorporates two variables: financial performance, including financial ratios, and the Altman Z Score to evaluate financial health status. Financial performance is evaluated by comparing the company's profitability, liquidity, activity and solvency ratios before and after the application of PLN Mobile. Those financial performance will also be tested by series of statistical tools

Firstly, Financial performances will be analysed for the data distribution normality test by using Shapiro wilk test. If they are normally distributed, then it will be followed by Paired Sample t-test. If they are not normally distributed, then

it will be followed by Wilcoxon Signed Rank Test. Those two tests will determine whether the result will be significant or not significant to meet the hypothesis.

Figure 3.1 describes about the research framework

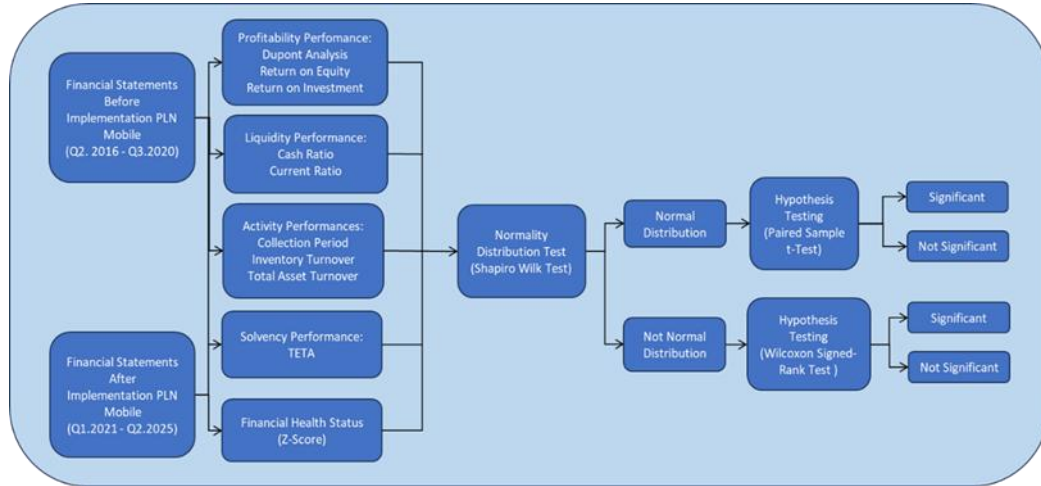


Figure 3.1: The Research Framework

Source: Data Process, 2026

3.4 Research Flow

This research starts with the identification of issues, followed by a literature evaluation from several sources, such as journals and books. Following that, the Altman Z score was utilized to evaluate financial health status and financial ratios using data collected from semi-annually financial reports from Q2 of 2016 to Q2 of 2025. The SPSS software is then used to carry out statistical analysis on the gathered data, followed by hypothesis testing.

The study then moves to an in-depth analysis and discussion of the statistical measurements and the outcomes of the hypothesis tests. After this exhaustive testing the results of the research are formally assessed for their wider implications. This systematic technique ensures that all the facts of a quantitative nature are well understood before a final conclusion is reached.

Subsequently, the paper synthesizes these discoveries to offer actionable recommendations for future scholarly exploration. These recommendations are intended to guide future research in response to any limits or new questions that might be identified in the course of the present analysis. In conclusion, this

approach provides a solid platform for researchers to build upon the present studies, as described in figure 3.2.

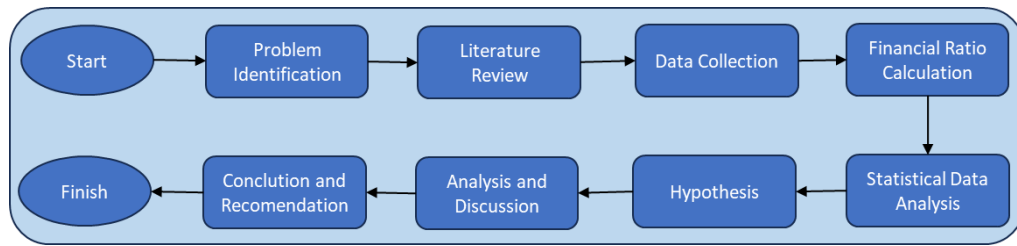


Figure 3.2: The Research Flow

Source: Data Process, 2026

3.5 Data Source

The Data used in this research, such as semi-annual financial statements, annual reports, etc, are secondary and fully gathered from The Company's official website.

3.6 Definition of Variables and Operational Variables

3.6.1 Definition of Variables

The classification of variables in research technique is essential as it influences the design, analysis, and interpretation of research results. The attributes or characteristics that might have a range of values are recognized as variables, and they are the basis for testing hypotheses and developing theories. Adeoye., (2023) illustrates that the precision of variable definition significantly impacts the collection, analysis, and use of data in addressing studies.

Researchers can determine causal conclusions by understanding the correlations between variables, which eventually enhances the validity and reliability of the study outcomes. To ensure that the planned research objectives are accomplished and to organize the study design, it is essential to distinguish between dependent and independent variables in this context.

Dependent variables are those that are impacted or influenced by changes in independent variables. they are frequently thought of as the results or responses in research. These variables typically get quantified and examined to identify their

fluctuations in response to various circumstances established by the independent variables.

It is simpler to identify the factors that contribute to the observed effects when dependent variables are precisely identified and managed for using techniques like scenario-based analyses (Wirth, 2018). In educational research, student academic performance may function as a dependent variable affected by multiple independent factors, including methods of teaching, class size, and student involvement (Adeoye, 2023). In this research, the dependent variables are profitability ratio, liquidity ratio, activity ratio and solvency ratio, and will be carefully executed since this has a direct impact on the research's findings and implications.

In contrast, independent variables are those that researchers modify or classify in order to examine their effect on dependent variables. They work as inputs or factors in the research framework, with their variations resulting in modifications to the dependent variables. The selection of independent variables must be consistent with the objectives and research questions in order to draw significant results (Adeoye, 2023).

The relationship of independent and dependent variables ultimately serves an important part in determining cause-and-effect relationships. It also enhances the understanding of complicated phenomena throughout a range of academic subjects. In this research, the independent variable is the implementation of PLN Mobile in the Company.

3.6.2 Operational Variables: Profitability, Liquidity, Activity and Solvency Ratio

Profitability ratios are important financial indicators that assess a company's capacity to generate earnings in relation to its revenue, operating expenses, and assets. They provide essential information regarding the effectiveness and efficiency of a business in the conversion of sales into profit. Profitability ratios, such as the net profit margin, return on assets (ROA), and return on equity (ROE), are frequently utilized to assess distinct aspects of a company's profitability.

Analysts and investors alike need to understand profitability ratios since they indicate a company's overall operational performance and financial health over a specific time range (Ibrahim, 2017).

On the other hand, liquidity ratios analyze a company's capacity for fulfilling its current obligations by utilizing its most liquid assets. The cash ratio, quick ratio, and current ratio are critical liquidity ratios which collectively evaluate an organization's financial resilience during periods of economic uncertainty or unanticipated expenditures. The significance of these ratios is that they provide an overview into the company's operational efficiency and short-term financial stability.

The availability of high liquidity ratios suggests that a company is capable of appropriately covering its current liabilities, making it a more secured investment alternative (RIzal & Musdalipah, 2016). Furthermore, studies showed that liquidity ratios might influence a wider range of financial decisions, including policies regarding dividends in public companies (Arsyad et al., 2021).

Activity ratios evaluate how efficiently a company utilize its assets in generating income, focusing operational productivity. Total asset turnover and inventory turnover are two illustrations of these ratios that indicate how effectively a company manages its resources and operational operations. A greater activity ratio indicates better asset management performance and less wasted resources (Listyawati & Wicaksana, 2023).

Activity ratio analysis is important in evaluating a company's operational efficiency. It is very useful to identify areas for improvement in a company. Done this properly, it can lead to higher overall profitability and shareholder value.

Solvency ratios evaluate a company's long-term financial stability and capacity to fulfil long-term obligations. Common solvency ratios include the debt-to-equity ratio and the interest coverage ratio, which assess the amount of the company's financing obtained from debt versus equity. These ratios are essential since they offer insights into the risk level associated with a company's capital structure.

Higher solvency ratio values often indicate lower financial risk, indicating to investors that the company is better positioned to continue expansion and weather economic downturns (Pambudi, 2022). Therefore, solvency ratios are important indicators that stakeholders use to assess an organization's long-term sustainability. Financial Health is an indicator which indicates the financial stability of a company. The financial health state can be evaluated using multiple methodologies, such as which is the Altman Z-score formula hypothesis.

3.7 Data Analysis Technics

Semi-annually financial reports will be utilized for calculating financial ratios, which include liquidity, solvency, activity, and profitability ratios. Based on MSOE decree No: KEP-100/MBU/2002, as described in Table 2.1, a total of eight financial ratio calculations were then collected. Additionally, the financial ratio will be assessed with the pair t-test or Wilcoxon signed rank test using the statistical software suite (SPSS), and the financial health condition were measured with the Altman Z-score method.

In research methodology, samples are usually classified into two types. The first kind is called paired samples. This classification is used when the same subjects are measured under multiple experimental circumstances. If the observed results are the same under these different settings, the study design is said to be dependent or paired.

This methodology is structured so that it is easy for researchers to compare measurements collected on the same subjects. The study design maintains this dependency between conditions, to reduce extraneous variance that may otherwise influence results. This allows us to have a thorough way of assessing if the differences in the results under different experimental settings are statistically significant.

As an example, two measurement ranges may be compared. Comparisons between before and after interventions are common in paired designs. The second one known as unpaired samples, also referred as independent samples, provide information from two independent groups. Results are provided for each subject separately in an unpaired or independent research design. Du Prel et al., (2010)

algorithm for selecting statistical tests for continuous endpoint is described in Figure 3.3.

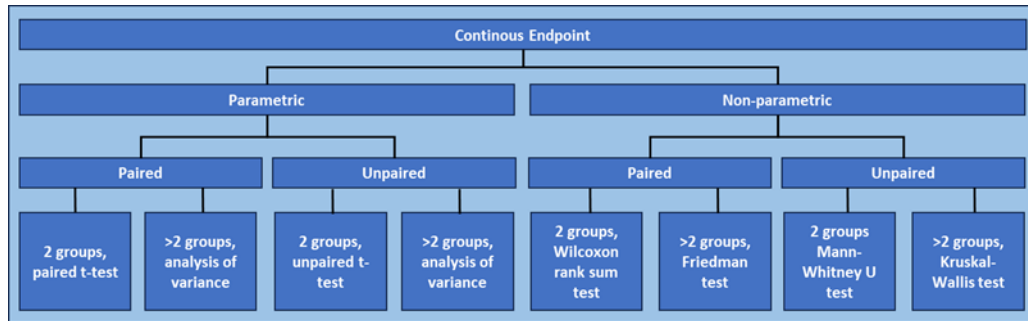


Figure 3.3: Algorithm for test selection group comparison of a continuous endpoint

Source: Du Prel, J. B., Röhrig, B., Hommel, G., and Blettner, M. (2010)

This Figure displays a decision-making framework to select an appropriate statistical test while evaluating a continuous endpoint. The first step in this method is to distinguish between parametric and nonparametric data. This differentiation is essential because parametric tests rely on assumptions about the underlying distribution of data, generally normality, but non-parametric tests do not.

Following the initial classification, the framework divides the data into paired and unpaired categories. Unpaired data consists of independent observations from various population. Paired data consists of dependent observations, commonly from the same individuals throughout time or under various conditions.

The Figure defines the specific statistical test to be utilized, depending on the number of groups for comparison. For parametric data, a Paired t-test is recommended for two paired groups, whereas analysis of variance (ANOVA) may be used for more than two groups.

In contrast, for unpaired parametric data, an unpaired t-test is used for two groups, whereas ANOVA is used for more than two groups. For non-parametric data, the Wilcoxon rank sum test is useful for paired data in two groups, while the Friedman test works best for more than two groups. Eventually, for unpaired non-parametric data, the Mann-Whitney U test is used for two groups, however the Kruskal-Wallis test is applied for more than two groups.

3.8 Hypothesis

A hypothesis is an essential element of scientific research, defined as a provisional explanation or educated speculation that suggests a measurable relationship between two or more variables (X. Jing et al., 2022). It provides the basis for examination and guides the research design. Moreover, it points to the overall direction of the investigation.

The paired sample t-test proposes a null hypothesis (H_0) that there is no difference in the means of the two related groups, whereas the alternative hypothesis (H_a) proposes that there is a significant difference. For example, in their study of student outcomes, Satya Gumelar et al., (2024) used the paired sample t-test to validate their hypothesis, concluding that a significant difference occurs when the p-value is less than the significance level (0.05). Similar to this, (Weda Dharmayasa, (2023) found that the Hangman game had a significant impact on students' vocabulary proficiency; the p-value of 0.000 supported their adoption of the alternative hypothesis.

These are the descriptions of the Hypothesis:

The null hypothesis,

$$H_0: \mu d = 0$$

The Alternative Hypothesis,

$$H_1: \mu d \neq 0 \text{ (two-tailed case)}$$

$$H_1: \mu d > 0 \text{ (upper-tailed case)}$$

$$H_1: \mu d < 0 \text{ (lower-tailed case)}$$

1. H_1 : The PLN profitability performances after the implementation of PLN Mobile is better compared to before the implementation of PLN Mobile.
2. H_2 : The PLN liquidity performances after the implementation of PLN Mobile is better compared to before the implementation of PLN Mobile.
3. H_3 : The PLN activity performances after the implementation of PLN Mobile is better compared to before the implementation of PLN Mobile.

4. H4: The PLN solvency performances after the implementation of PLN Mobile is better compared to before the implementation of PLN Mobile.
5. H5: The PLN financial health after the implementation of PLN Mobile is better compared to before the implementation of PLN Mobile.

CHAPTER 4: ANALYSIS AND DISCUSSION

4.1 Analysis on financial performance outcomes

This study will examine at many financial ratios that were mandated by the Ministry of SOE's decree No: KEP-100/MBU/2002, dated June 4, 2002. These financial ratios are grouped into four categories: profitability ratio, liquidity ratio, activity ratio, and solvency ratio.

4.1.1 Profitability Performance

The performance indicators chosen for examination are Return on Equity and Return on Investment. Later these particular indicators were classified in the profitability ratio category. As the result of the study on the quarterly financial statements, these Figures of Return on Equity from 2018 to 2024 were managed to be gathered as shown in Figure 4.1.

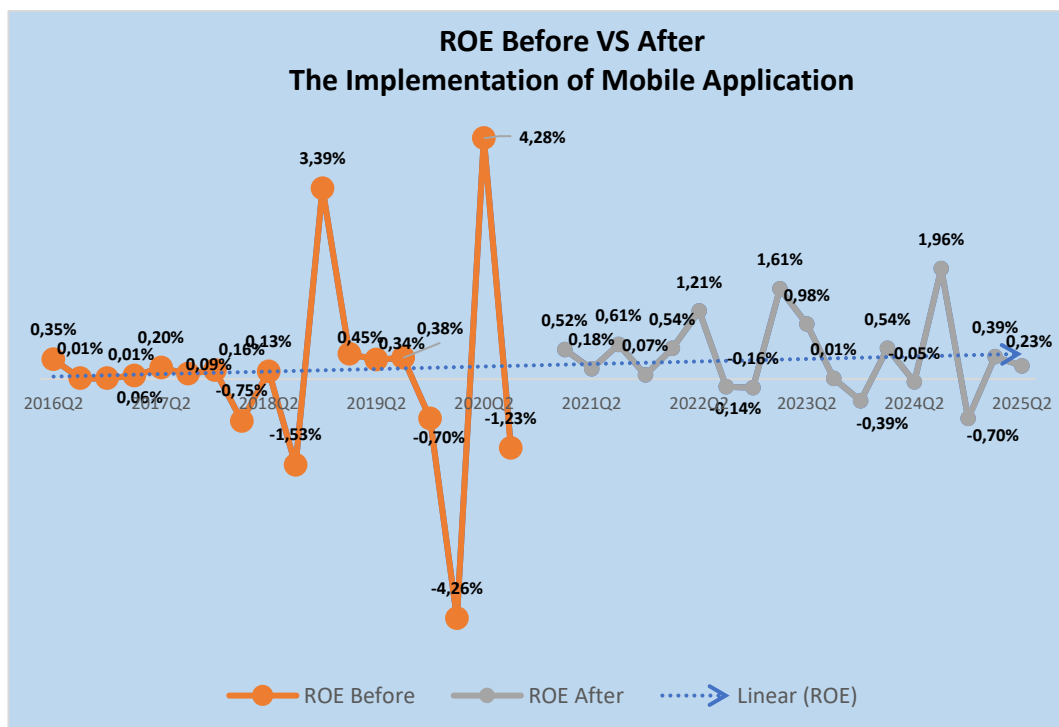


Figure 4.1: Graphic Return on Equity 2016Q2 - 2025Q2

Source: Data Process, 2026

Based on Figure 4.1, in general, ROE's the linear trend line is flat to slightly upward. This indicates that between 2016Q2 to 2025Q2, while the long-term structural return on equity is still low, it illustrates a pattern that indicates significant instability, followed by a period of controlled recovery.

- Low Baseline: The average ROE persistently stayed below 1% during most of the period, emphasizing the company's low-margin, public service obligation.
- Severe Volatility: The company confronted substantial non-operational volatility, with return on equity falling into markedly negative levels (for instance, falling as low as -4.26% in the first quarter of 2020), mainly due to external financial disruptions.
- Post-2020 Stabilization: After a significant peak in 2020Q2, the serious negative volatilities were mainly mitigated, leading the ROE to stabilize within a persistently positive yet modest range, generally above 0.5% on a quarterly basis, therefore indicating an essential improvement in financial management.

The fluctuating ROE is a direct result of PLN's specific financial framework as a heavily indebted, price-regulated State-Owned Enterprise (SOE). The main reason for the extremely poor quarters was that subsidized tariffs, made it challenging to pass on quickly rising costs, like Foreign Exchange (FX) losses on debt and rising fuel costs, to customers. Because of this "Regulation" non-cash liabilities usually eliminate out the Profit for the Year (Net Income, the numerator in ROE).

Furthermore, PLN is a state-owned enterprise (SOE) that has the responsibility for big infrastructure projects (CAPEX) that are usually paid for with big loans from foreign countries. Normally, debt increases returns (leverage), however in PLN's case, the resulting foreign exchange exposure turns operational risk into balance sheet instability, which causes non-cash losses that negatively impact the ROE. There were also several spikes that was most likely due to not only the settlement of government subsidies and compensation that had been delayed for

a long time, but also surprisingly the sales that was made during the Covid-19 pandemic.

The unexpected surge in revenue was essential in helping to maintain financial stability during the COVID-19 pandemic. The study also calculates the Return on Investment for the period of 2016Q2 to 2025Q2 in order to further examine the profitability of the company. These results are summarized in detail in Figure 4.2.

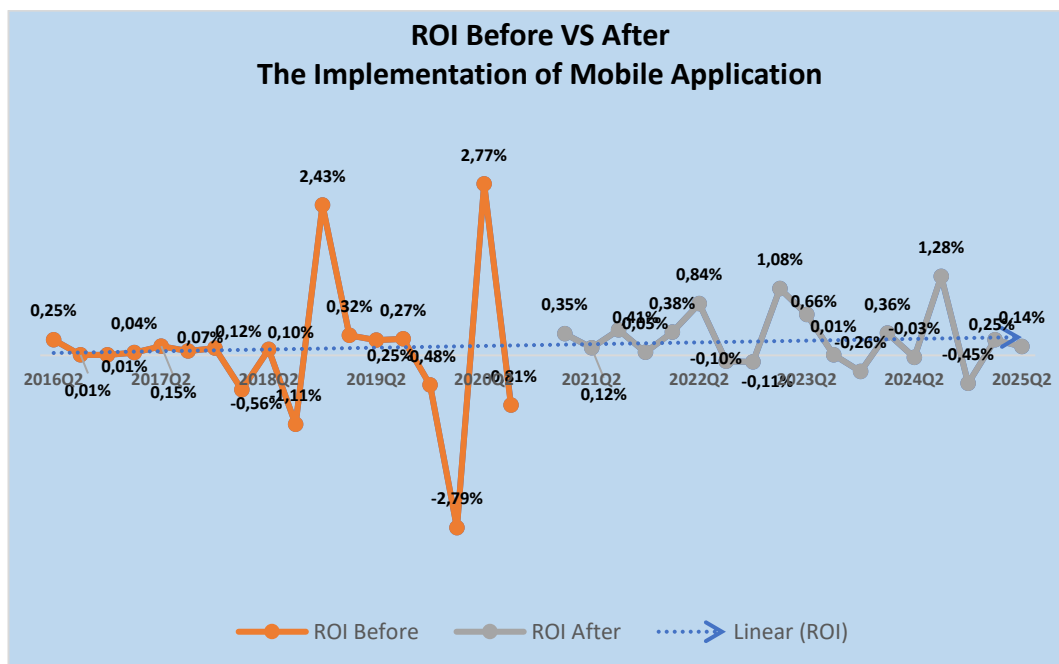


Figure 4.2: Graphic Return of Investment 2016Q2 – 2025Q2

Source: Data Process, 2026

The linear (ROI) trend line displays a slightly moderate upward slope. It indicates that, despite the significant volatility, long-term structural profitability is slowly improving.

- **Baseline Stability.** From 2016 to 2018, the ROI remained in a stable positive range, averaging 0.14% in quarterly reports. This implies that PLN's assets are slightly productive.
- **The Several Drops.** Similar to ROE, the drops were mostly due to the external factors, such as foreign exchange.

- After the low in 2020, the ROI surely went up, with annual Figures increasing from the 0.12% to a peak of about 1.28% by 2024. This indicated that the operations were getting more efficient.

The basis of PLN's stable but improving Return on Investment (ROI) is essentially the unique aspect of the asset base and a steady improvement in operating efficiency. The company's Capital Employed is considerable and little change occurs, mostly because its fixed assets are long-term assets that depreciate slowly over time. And the reason for this higher trajectory that we see beyond 2020 is mostly because of a dramatic increase in net income relative to the value of those assets.

The good trend is the result of successful cost-management measures and the deliberate streamlining of corporate operations. The firm has been able to use those efforts to cut, or at least delay the development of, fixed operating expenses relative to total revenues. Management improved the efficiency of its capital use to generate returns through the optimization of internal procedures.

On the other hand, the negative ROI reported in the second quarter of 2020 illustrates the strong impact of excessive market volatility in that period. This decline was largely attributed to the global pandemic which placed great stress on the economic climate and company operations. The abrupt shock led to a short-term but significant disturbance in the company's financial performance measures.

That was a major drop during that era, but the comeback afterwards shows the strength of the company's main financial structure. There is a testament to the effectiveness of the actions taken to steady and bolster company finances, allowing us to walk away from the pandemic-created hole. In the end, the data shows how operational discipline enables the firm to negotiate and recover from external economic shocks.

4.1.2 Liquidity Performance

The Current Ratio and Cash Ratio were categorized together as liquidity ratios for this analysis. Based on an examination of the quarterly financial statements, the data for the Current Ratio from 2016 to 2024 was successfully compiled. These findings are presented in Figure 4.3.

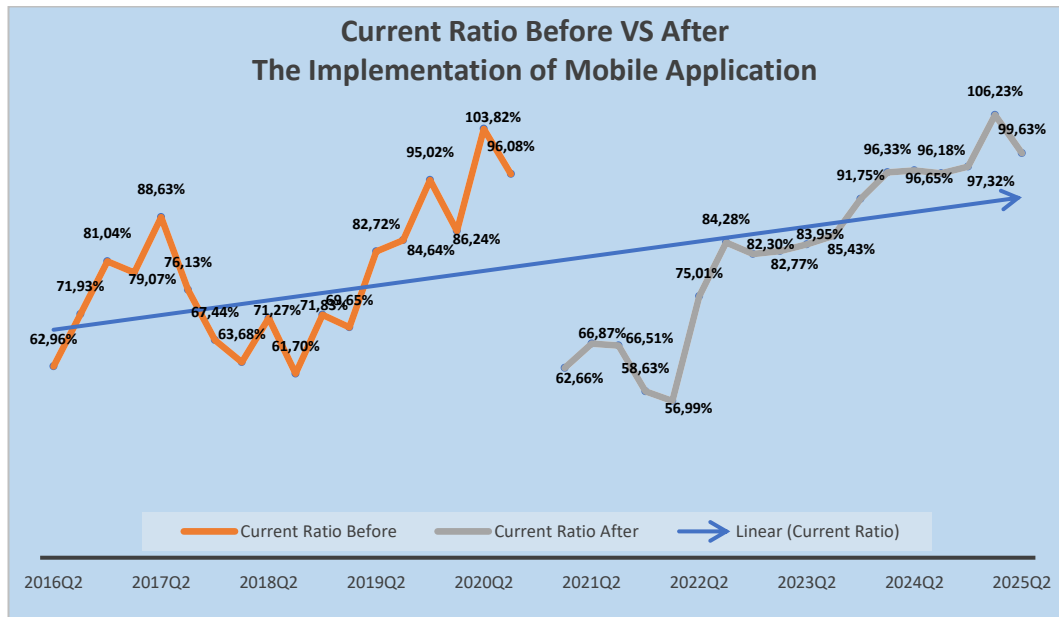


Figure 4.3 Graphic of Current Ratio 2016Q2 – 2025Q2

Source: Data Process, 2026

The Current Ratio analysis for PLN from 2016Q2 to 2025Q2 illustrates a significant shift from a situation where there was always a lack of liquidity to one where there is sufficient liquidity to stay solvent.

- **Pre-Implementation:** Before 2020Q4, the Current Ratio was always below the 100% liquidity threshold, often falling as low as 61% (2018Q3). This indicates that Current Liabilities were generally greater than Current Assets.
- **Extreme Volatility:** This early phase was very volatile, with fluctuations from 86.24% in 2020Q1 to 103.82% in 2020Q2. This illustrates that short-term financial management was not very stable.
- **Post-Implementation V-Shaped Recovery:** After crashing to a low of 56.99% in 2022Q1, the ratio started to rise quickly and steadily, reaching

a stable level above 90% by the end of 2023 and consistently going above 100% by 2025Q1. This was a big step forward for short-term health.

In the early years, the corporation was unstable, with a ratio of less than 100% due to the challenges of managing a huge, subsidized utility. Then a definite V-shaped recovery formed, signifying a dramatic turnaround. This pattern indicates a significant structural improvement in operations.

The constant deficit observed before 2023 indicates a significant reliance on short-term funding sources, or current liabilities, relative to readily convertible assets. This trend typically suggests that the organization is managing high levels of short-term debt or faces immediate obligations to its suppliers. Such a financial structure highlights the underlying liquidity challenges inherent in maintaining consistent operational solvency.

The large deviations in the data were due mainly to two variables. First, the company's current assets and receivables were strongly affected by the inconsistent timing of government subsidies and compensation payments. Second, the coincidence of debt service obligations with major fuel and supplier payments produced further financial turbulence.

The sharp decline in performance just after the introduction of PLN Mobile was possibly caused by a one-time event like a large part of current liabilities falling due or a delay of government receivables. The corporation must face these particular financial difficulties immediately in order to be able to fully profit from the long-term advantages of its digitisation efforts. Removing these barriers was ultimately a vital step in stabilizing the organization's financial condition upon introduction of the new system.

The analysis of liquidity performance also incorporates an examination of the cash ratio. Based on a review of the quarterly financial statements, the data for the cash ratio from 2016 to 2024 has been successfully compiled. These findings are presented in Figure 4.4.

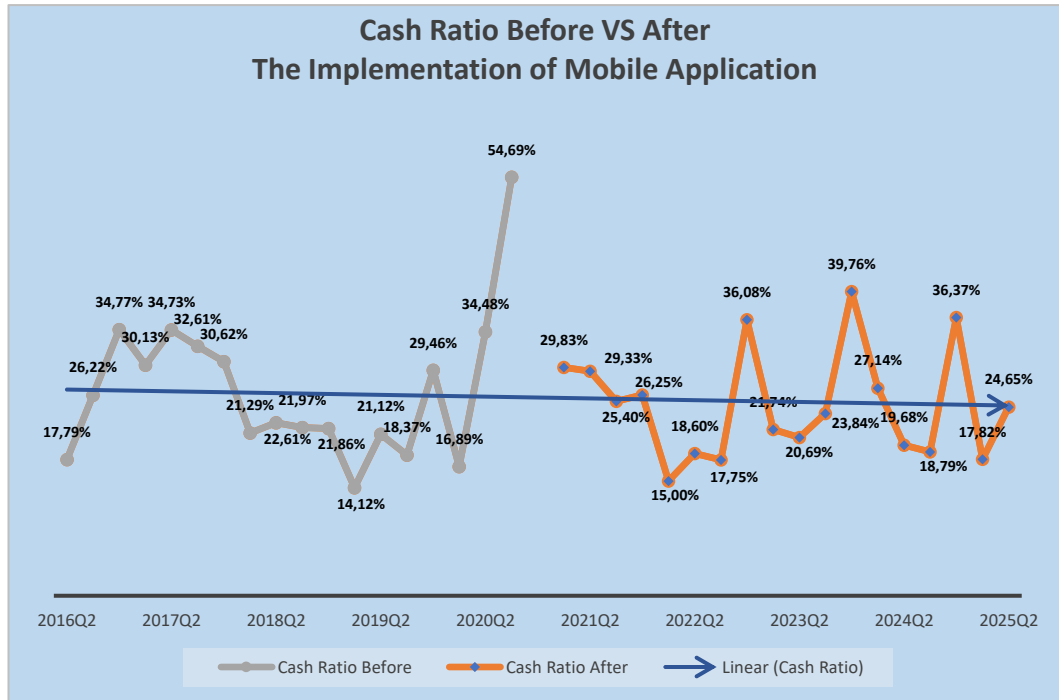


Figure 4.4: Graphic of Cash Ratio 2016Q2 – 2025Q2

Source: Data Process, 2026

The Cash Ratio for PLN from 2016Q2 to 2025Q2 shows a trend of chronic low liquidity followed by major, beneficial increases, indicating that cash management is very responsive to specific financial events.

- **Low Baseline:** The ratio consistently stayed low, typically ranged between 15% and 30% for most quarterly periods, indicating that PLN maintains relatively small cash savings relative to its short-term debt obligations.
- **Extreme Spikes:** The data indicates big increases up, like 54.69% in 2020Q3 and then annual increases after that (like 39.76% in 2023), followed by fast drops back to the baseline.
- **No Long-Term Trend:** Unlike the Current Ratio, the Cash Ratio does not demonstrate a clear, persistent progress toward a higher average

throughout the entire time, suggesting that while collections are faster, the surplus cash is quickly deployed or utilized to pay liabilities.

The Cash Ratio's low average and significant volatility are due to PLN's dependence on large cash inflows and the need to utilize any cash it receives quickly. The spikes in the ratio are probably certainly due to the receipt of large, late payments, including government subsidies or compensatory payments. The Cash Ratio increases up for a brief period when these payments are made in a single, significant quantity.

PLN's cash conversion cycle is very quick and very efficient, as can be seen in the swift drop after each financial spike. Instead of storing idle cash, the corporation uses the cash pouring in to pay down the present liabilities with high volume quickly. These commitments often involve payments for fuel, interest or debt tranches maturing.

For a regulated utility filled with big debt and large fuel costs, holding cash is unproductive because it doesn't earn interest. Thus, a low cash ratio is an indication of careful treasury management, rather than a red flag of financial difficulty. This lean approach to liquidity is a critical technique to efficiently manage the company's large debt obligation.

4.1.3 Activity Performances

The study classifies the Collection Period, or Accounts Receivable Turnover, with Inventory Turnover and Total Asset Turnover as performance activity. We managed to assemble the essential data to analyse these measures by reviewing the company's quarterly financial records. This systematic technique allows a full picture of the efficiency of the management of the operational resources of the company.

This study has been effective in collecting the particular numbers for Accounts Receivable Turnover from 2016Q2 to 2025Q2. These are important data elements to understand how swiftly the company is collecting its debts over the period of observation. The results of this investigation are clearly displayed for examination in Figure 4.5.

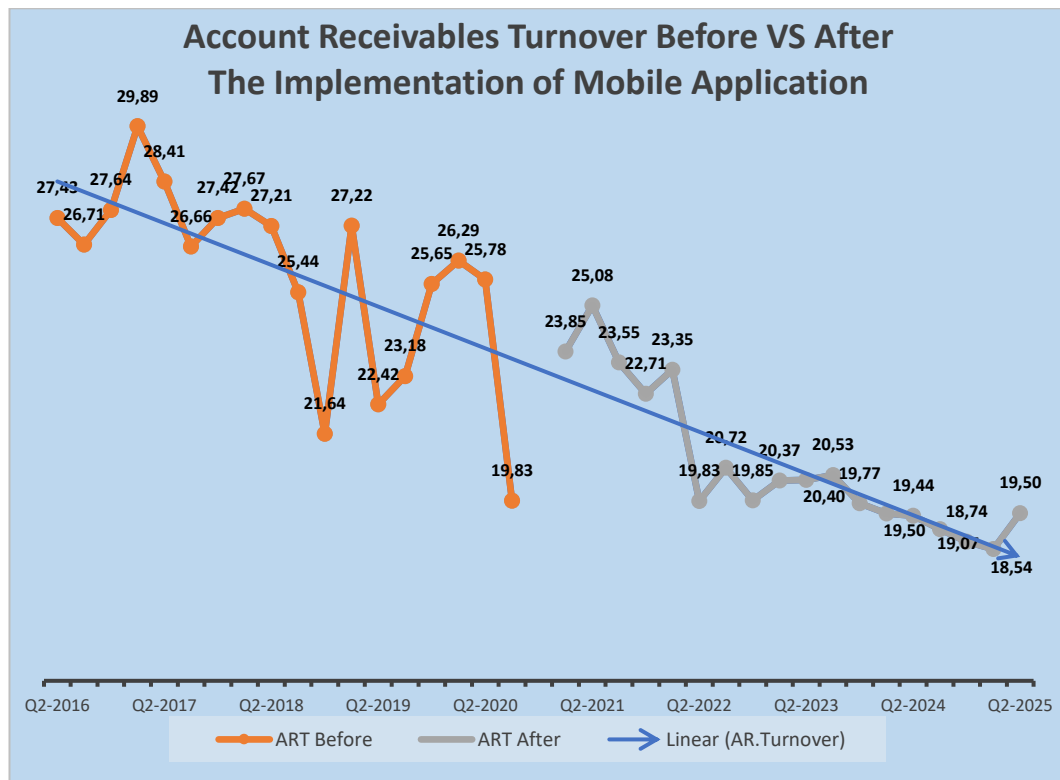


Figure 4.5: Graphic of Account Receivables Turnover 2016Q2-2025Q2

Source: Data Process, 2026

The data indicates that collecting quality has continually and substantially improved over the last ten years:

- The Baseline (2016–2017): The CoP was at its highest point in the beginning, reaching 29.89 days in 2017Q1. The average time it took to gather during this time was between 27 and 28 days.
- Pre-Implementation Steady Decline (2018–2019): Before the app was officially released, there was already a slight decline trend, with numbers dropping into the 25 - 26 day range.

- The Implementation Phase (2020): 2020 was a turning point, with the CoP hitting a record low of 19.83 days in 2020Q3, which was when the company started to move toward digital billing.
- Sustainable Efficiency (2021–2025): The corporation has been able to "lock in" these gains once they were made. The CoP has mostly been below 25 days, hitting a record low of 18.54 days in the first quarter of 2025. There was a small seasonal rise to 19.50 days in the second quarter of 2025.

Figure 4.5's blue linear trendline indicates that the system has become better. This isn't just a temporary event. The company intends to permanently change how it manages its "Meter-to-Cash" cycle. From a business point of view, a reduction from about 29 days to less than 20 days means that cash moves 15–20% faster.

PLN "unlocked" billions in working capital that was previously stuck in receivables by decreasing the collection cycle by about 7 to 9 days on average. This is what directly caused the Current Ratio to increase up. PLN collects the cash more than 13 times a year since its CoP is fewer than 20 days. This is quite efficient for a large utility company with a wide range of customers.

The examination of activity performance also comprises a detailed review of inventory turnover. This indicator is critical for determining how successfully the organization controls its stock levels relative to its operational demands. By evaluating the quarterly financial statements, we have successfully acquired the essential data for this investigation.

The numbers for inventory turnover from 2016 to 2024 were methodically gathered to assure correctness. This historical data provides a clear insight of trends in inventory management over the previous eight years. These thorough findings are presented for your reference in Figure 4.6.

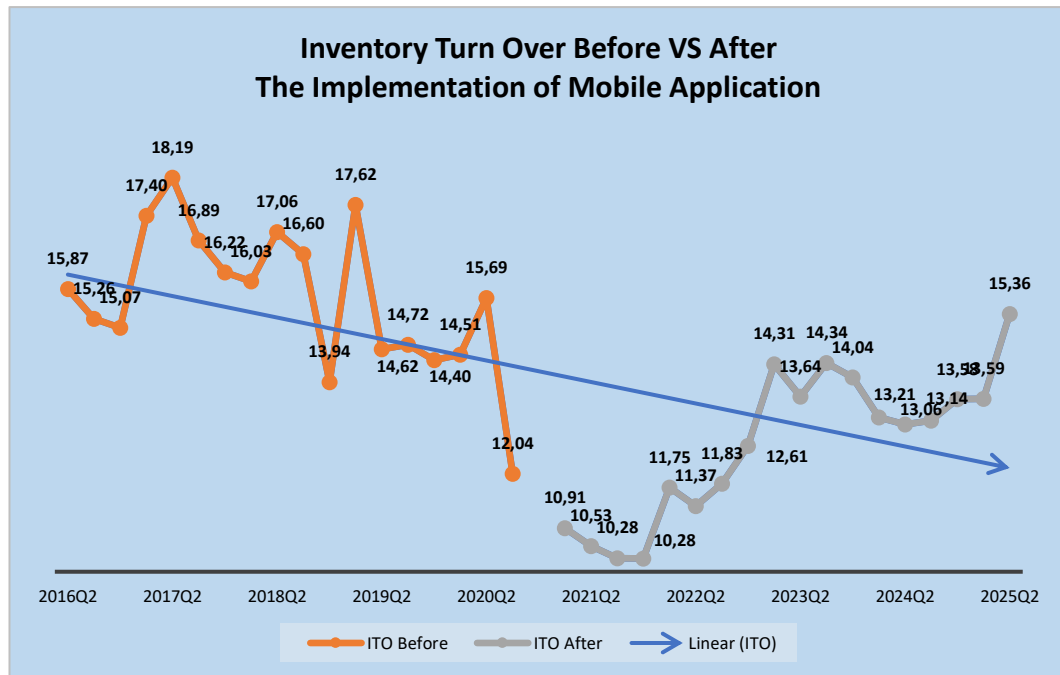


Figure 4.6: Graphic Inventory Turnover 2016Q2 – 2025Q2

Source: Data Process, 2026

Based on the formula given in Table 2.6, The longitudinal data shows a "V-shaped" efficiency curve that takes place around the 2020 implementation:

- The Volatile Baseline (2016–2019): Before the digital transition, the ITO was quite high and shifted a lot, reaching its highest point of 18.19 days in the second quarter of 2017. During this time, the company usually kept inventory for 14 to 17 days depending on its sales.
- The Efficiency Peak (2020–2022): Following the 2020 Implementation, the number of days in inventory declined sharply and remained low. The ratio reached a record low of 10.28 days in 2021, which was the best level of inventory efficiency in the past decade.
- The Slow Return to Normal (2023–2025): The ITO began to rise again in 2023, reaching 15.36 days in 2025Q2, which was the same level it was

at when it was put into place. Even though the increase happened, the general linear trendline is still going down, indicating that things are getting improved in the long term.

From a business perspective, a lower value in this "days" formula is generally preferable because it signifies that less capital is trapped as dormant warehouse stock. The decline to 10.28 days in 2021 indicates that PLN successfully shifted toward a more efficient inventory management model. By reducing the volume of inventory relative to its sales, the company liberated more cash for essential operations and debt servicing.

During this period, PLN accelerated its inventory turnover significantly, effectively doubling its efficiency by moving from 18 days in 2017 to 10 days in 2021. This substantial improvement demonstrates a heightened capability to manage stock levels in alignment with revenue generation. The trend highlights a disciplined approach to asset utilization during those years.

However, the subsequent increase to 15.36 days in 2024–2025 marks a notable change in this trajectory. This shift likely reflects the intensive infrastructure growth required for the "Energy Transition" initiatives currently underway. Alternatively, it may be attributed to the rising costs of materials and fuel outpacing revenue growth during those specific quarters.

The last ratio in Activity performance is Total Asset Turnover. As the result of the study on the quarterly financial statements, these Figures of Total Asset Turnover from 2016 to 2024 were managed to be gathered as shown in the Figure 4.7

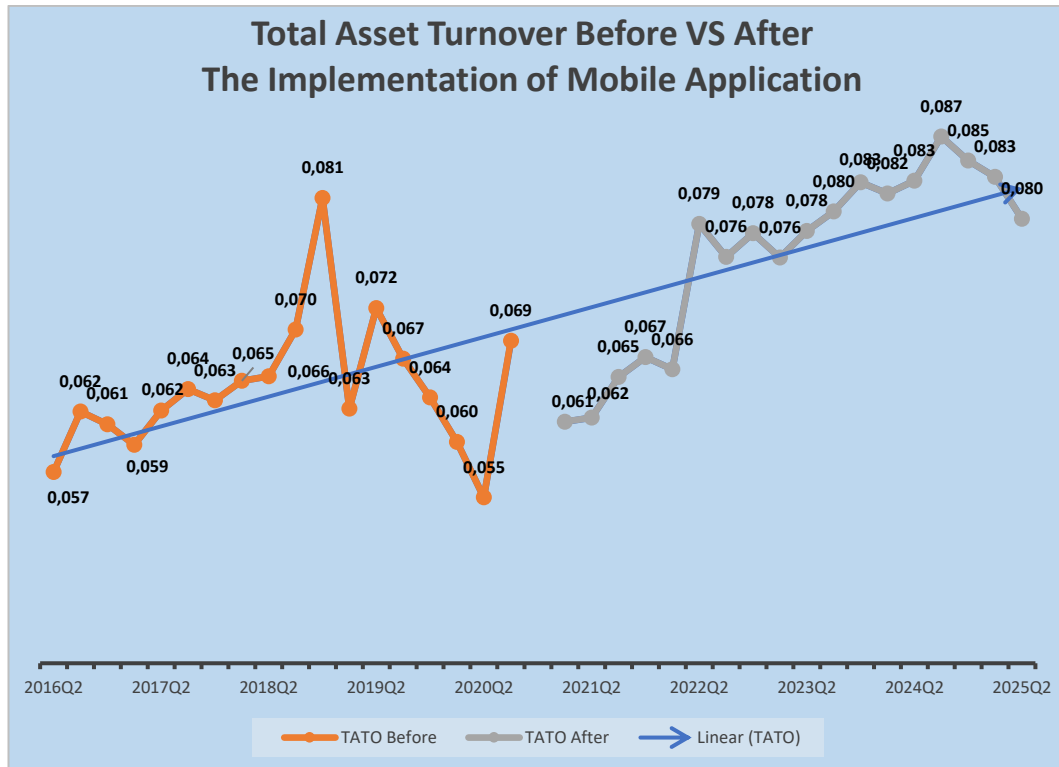


Figure 4.7: Graphic of Total Asset Turnover 2016Q2 – 2025Q2

Source: Data Process, 2026

Figure 4.7 indicates that efficiency changed in significant ways between the before and after the implementation.

- The "Efficiency Floor" (2016–2019): For just over four years, TATO remained the same, only going up and down slightly between 6.26% and 7.16% (with an exception in 2018). This shows a time when revenue growth was only possible through—and restricted by—the growth of physical assets.
- The Pandemic Contraction (2020Q2): Just before the program launched, TATO fell to a decade-low of 5.48%. This was because industrial electricity demand decreased sharply during the global lockdowns.
- The Post-Implementation Growth (2021–2025): After the 2020 Implementation, the ratio started to rise consistently. It went over 7% in 2022 and hit an all-time high of 8.69% in the third quarter of 2024. The

corporation is still much more efficient than it was in 2016, even if it will return to a regular level of 7.95% in 2025Q2.

From a business point of view, the shift from a 5.7% baseline to an 8.7% peak show that assets are becoming more productive. A utility company has a lot of "Capital Employed," including power plants and transmission lines.

PLN is successfully growing its Total Revenue faster than it is spending on new Capital Assets, which is shown by an increasing TATO. This is what a "digital-first" scale model looks like. The increase from 5.48% in 2020 to 8% in 2024 shows that the business has gone from "recovery" to "optimization."

The blue line on your graph shows that this is a permanent change in the structure, not just a transitory change in the market. PLN is still putting money into the energy transition, but the "Capital Employed" is being used more. Every Rupiah of infrastructure now brings in more "Rupiah of Sales" than it did ten years ago.

4.1.4 Solvency Performance

According to the MSOE Decree, the solvency performance assessment is represented by a single metric: the Total Equity to Total Assets ratio. To conduct this study, we performed an extensive review of the company's quarterly financial statements. This analytical process allowed for the systematic collection of the necessary data for our solvency evaluation.

The figures for the Total Equity to Total Assets ratio have been successfully gathered for the period ranging from 2016Q2 to 2025Q2. This historical dataset provides a clear overview of the company's long-term financial health and capital structure. These findings are presented in detail for your reference in Figure 4.8.

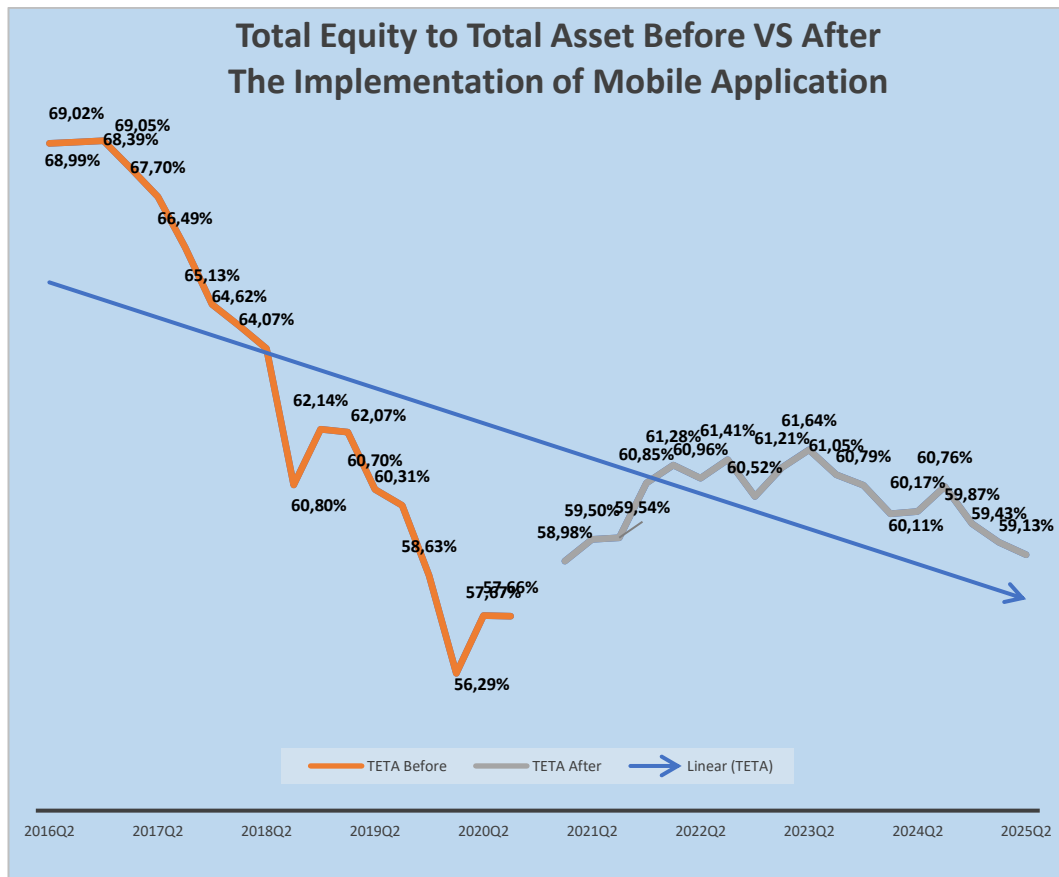


Figure 4.8: Graphic of Total Equity to Total Asset 2016Q2 – 2025Q2

Source: Data Process, 2026

The TETA ratio shows that the way the company has been financing its capital has changed a lot in the last ten years:

- The Solvency depletion (2016–2020Q1): The period started with a solid equity position of 69.05% in 2016. But after that, it fell steadily for four years, hitting a ten-year low of 56.29% in the first quarter of 2020.
- The "Digital Pivot" and Stabilization (2020–2025): The decreasing trend stopped at the point of Implementation (2020). The ratio returned up again to the 60% range instead of continuing to fall, and it remained very consistent for the last five years, finishing at 59.13% in 2025Q2.
- Linear Trendline vs. Reality: The blue linear trendline shows that the company's performance has been declining down overall, but the real data shows that it has been "flat" since 2021, which means the company has achieved a new financial balance.

From a solvency point of view, the trend is shifting from "Debt-Heavy Expansion" to "Efficiency-Driven Stability." The 13% decline in the ratio before 2020 indicates that PLN was mostly using debt to pay for its huge national infrastructure projects, such the 35,000 MW project. During this time, the ratio fell because total assets increased faster than total equity.

The fact that it has stabilized roughly 60% since 2020 indicates it is financially stable. A utility firm with a 60% equity-to-asset ratio is quite substantial (30–40% is normal). This gives them a huge "safety buffer" against financial problems or rising interest rates. The stabilization means that PLN's assets currently generate enough money on their own (Retained Earnings) to pay for their own replacement and development, instead of having to continue getting fresh loans.

4.1.5 Altman Z-Score Analysis

This study uses the Altman Z-Score as the main tool to measure the company's overall health performance. The data needed for this indicator were collected for the period 2016-2024 after a detailed review of the quarterly financial statements. This lengthy process ensures that the rating reflects financial stability of the company during the period of time specified.

The figures produced by the Altman Z-Score have been effectively compiled and categorized for future examination. The data points provide valuable insights about the company's financial resiliency and possible risk profile during the years analysed. See Figure 4.9 for a graphic illustration of these findings and their consequences.

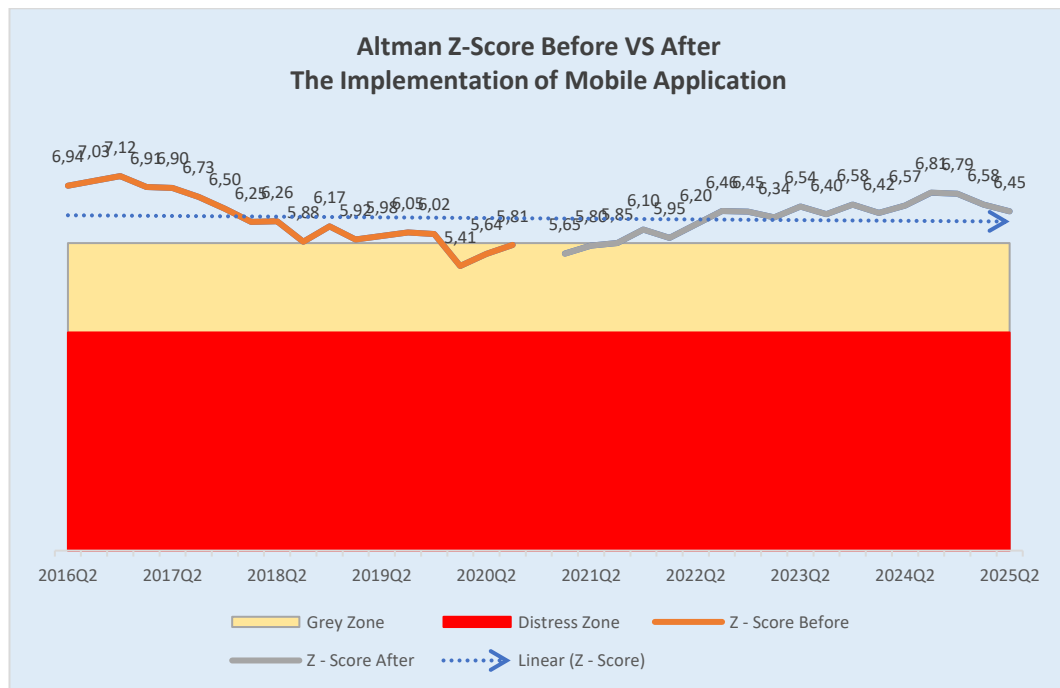


Figure 4.9: Graphic Altman Z-Score 2016Q2 – 2025Q2

Source: Data Process, 2026

The data illustrates a clear "V-shaped" path centered around the 2020 Digital Implementation:

- The Pre-Digital Decline (2016–2020): PLN started with a high score of 7.12 in 2016, but it slowly declined over the next few years. The score reached its lowest score of 5.41 in the first quarter of 2020.
- The Transformation Pivot (2020): The digital reforms are expected to go into effect in 2020. In the latter few months of 2020, the scores started improving instantly (5.81).

- The Post-Digital Recovery (2021–2025): The score has been consistently increasing up since 2021. It went from a low of 5.65 (2021Q1) to the upper 6s, where it reached its highest point of 6.81 (2024Q3).

In 2020Q1, PLN was found deep in the Grey Zone of financial health. This status indicates that, without the 2020 transformation, the company was on a clear path to the Distress Zone. This concerning classification is indicated by an Altman Z-Score of less than 4.15, which is the critical threshold.

4.1.6 Dupont Analysis

The average of financial components was calculated using the formula presented in Figure 2.1 for the period before and after the use of PLN Mobile application. This analysis was conducted to provide a clear baseline for assessing the effect of the digital revolution. This approach to data segmentation allows us to successfully separate operational changes that took place through both periods.

The results of these extensive calculations are shown in Table 4.1 for further consideration. This table shows the particular variations in the financial performance indicators that distinguish the pre- and post-implementation periods. The results gathered will be the basis for the following discussion on the impact of the application on the financial health of the company.

Table 4.1: Dupont Components

Component	Before Implementation	After Implementation	Impact	
Net Profit Margin	0,82%	3,67%	↑	4,49 X
Asset Turnover	0,064 X	0,076 X	↑	1,18 X
Equity Multiplier	1,39 X	1,5 X	↑	1,08 X

Source: Data Process, 2026

The data from 2016Q2 to 2025Q2 indicates that PT PLN's finances shifted quickly following the 2020 digital transition. The "Before Implementation" phase experienced solvency went decline, while the "After Implementation" phase displays a "High-Quality" recovery. The Net Profit Margin (NPM) jumped up 4.49 times, from an average of 0.82% to 3.67%. The Total Asset Turnover (TATO) increased up 1.18 times, from an average of 0.061 to 0.076.

Leverage Stability: The Equity Multiplier (EM) was merely up 8% (from 1.39 to 1.50), even if profits climbed a lot. This shows that too much debt didn't cause the growth.

The nine ratios don't work on their own; they are all pieces of one financial engine:

- The Profitability Engine (ROE, ROI, NPM): The massive 4.49 effect on Net Profit Margin (NPM) is what shifted things around. This indicates that the digital shift made it less costly to serve customers, resulting to higher ROE and ROI from internal efficiency instead of external subsidies.
- The Efficiency Engine (ITO, COP, TATO): The 1.18 effect on Asset Turnover (TATO) indicates that PLN was capable of convert its grid assets into liquidity more quickly. This is in line with a shorter Collection Period (COP) and a longer Inventory Turnover (ITO) that the digital billing environment makes possible. The Solvency & Health Engine (TETA, Z-Score): While the Equity Multiplier rose slightly to 1.50, the Altman Z-Score recovered from the Grey Zone (5.41) to the Safe Zone (6.81). This shows that the small rise in leverage was not sufficient to make up for the major rise in efficiency (Profitability/Activity).
- The Liquidity Bridge (Current & Cash Ratio): The Z-Score could only go back up because the digital tools made working capital more efficient, which kept the Current and Cash ratios healthy enough to help the recovery in 2020.

4.2 Hypothesis Research Testing

4.2.1 Profitability Performance Normality Distribution Test and Hypothesis Testing Analysis

Following the research approach stated in Figure 3.1, we investigated the Return on Equity (ROE) data shown in Figure 4.1 to see whether it follows a normal distribution. As the data population comprised 36 observations, the Shapiro-Wilk

test was determined to be the most suitable statistical procedure for analysis. This particular test is used commonly for testing normality of data of this size.

Table 4.2 Systematic presentation of the results of the Shapiro-Wilk test. This table contains the statistical output necessary to check the distribution features of the ROE data. Therefore, these results are the basis for the choice of the future analytical approaches used in this work.

Table 4.2: Normality Test for ROE

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
ROE Before	.306	18	<.001	.830	18	.004
ROE After	.257	18	.003	.816	18	.003

Source: Author, SPSS

Table 4.2 present that based on Shapiro-Wilk test, the Sig (p -value) for ROE Before is 0.004 and ROE After is 0.003. Comparing those Figures to the standard significance level α , which is 0.05, the ROE Before is less than α (Not Normally Distributed) and the ROE After is also less than α (Not Normally Distributed). Since both variables (ROE Before and ROE After) are not normal, the most conservative and appropriate approach is usually to use a non-parametric test for the comparison.

Consequently, the Wilcoxon Signed-Rank Test was selected as the appropriate non-parametric method for this analysis. The results derived from this statistical procedure are systematically presented in Table 4.3. These findings provide the necessary evidence to support the subsequent evaluation of the data.

Table 4.3: ROE's Wilcoxon Test Result

Statistic	ROE After - ROE Before
	Value
Z	-3.180
Asymp. Sig. (2-tailed)	.001

Source: Author, SPSS

Based Table 4.3, the critical value (p -value) of the Asymp. Sig. (2-tailed) is 0.001. Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_1 is accepted.

Beside ROE, this study also categorized ROI in Profitability performance. Using the research framework in Figure 3.1, we examined the ROI data in Figure 4.2 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.4

Table 4.4: Normality Test for ROI

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
ROI Before	.302	18	<.001	.836	18	.005
ROI After	.263	18	.002	.814	18	.002

Source: Author, SPSS

Table 4.4 present that based on Shapiro-Wilk test, the Sig (p -value) for ROI Before is 0.005 and ROE After is 0.002. Comparing those Figures to the standard significance level α , which is 0.05, the ROI Before is less then α (Not Normally Distributed) and the ROI After is also less than α (Not Normally Distributed). Since both variables (ROI Before and ROI After) are not-normal, the most conservative and appropriate approach is usually to use a non-parametric test for the comparison.

Therefore, the non-parametric Wilcoxon Signed-Rank Test was selected as the suitable statistical method for this investigation. The data obtained from this technique are systematically shown in Table 4.5. These findings provide the evidence to support the next steps in evaluating the data.

Table 4.5: ROI's Wilcoxon Test Result

ROI After - ROI Before	
Statistic	Value
Z	-3.627
Asymp. Sig. (2-tailed)	<.001

Source: Author, SPSS

Based Table 4.5, the significance value (p-value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the p-value is less than α . Therefore, H_1 is accepted.

4.2.2 Liquidity Performance Normality Distribution Test and Hypothesis Testing Analysis

Using the research framework in Figure 3.1, we examined the Current Ratio data in Figure 4.3 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.6.

Table 4.6: Normality Test for Current Ratio

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Current Ratio Before	.150	18	.200	.957	18	.553
Current Ratio After	.141	18	.200	.965	18	.699

Source: Author, SPSS

Both the Current Ratio Before (0.553) and Current Ratio After (0.699) variables have Shapiro-Wilk p-value that are greater than the standard significance level α , which is 0.05. Therefore, both datasets are consistent with a normal distribution. Since both variables qualified for the assumption of normality, the appropriate test applied was The Paired-Samples T-test, to compare the correlation of Current Ratio Before and Current Ratio After. Table 4.7 was resulted by the test.

Table 4.7: Current Ratio's Paired t-test Result

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Significance	
					Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Current Ratio Before - Current Ratio After	-7.79222	8.88473	2.09415	12.21049	-3.37395	-3.721	17	<.001	.002

Source: Author, SPSS

Based on Table 4.7, the significance value (p -value) of the Asymp. Sig. (2-tailed) is 0.002. Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_2 is accepted.

Beside Current Ratio, this study also categorized Cash Ratio in Liquidity performance. Using the research framework in Figure 3.1, we examined the Cash Ratio data in Figure 4.4 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.8

Table 4.8: Normality Test for Cash Ratio

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Cash Ratio Before	.171	18	.172	.886	18	.033
Cash Ratio After	.115	18	.149	.903	18	.064

Source: Author, SPSS

Table 4.8 present that based on Shapiro-Wilk test, the Sig (p -value) for cash ratio before is 0.033 and cash ratio after is 0.064. Comparing those Figures to the standard significance level α , which is 0.05, the cash ratio before is less than α (Not Normally Distributed), yet the cash ratio after is greater than α (Normally Distributed). Conservatively, since one of the variables (cash ratio before) is non-normal, the most conservative and appropriate approach is usually to use a non-parametric test for the comparison.

Therefore, the non-parametric Wilcoxon Signed-Rank Test was selected as the suitable statistical method for this investigation. The data obtained from this technique are systematically shown in Table 4.9. These findings provide the evidence to support the next steps in evaluating the data.

Table 4.9: Cash Ratio's Wilcoxon Test Result

Cash Ratio After - Cash Ratio Before	
Statistic	Value
Z	-3.724
Asymp. Sig. (2-tailed)	<.001

Source: Author, SPSS

Based on Table 4.9, the significance value (p -value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_2 is accepted.

4.2.3 Activity Performance Normality Distribution Test and Hypothesis Testing Analysis

Using the research framework in Figure 3.1, we examined the Account Receivables Turnover data in Figure 4.5 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.10.

Table 4.10: Normality Test for Account Receivables Turnover

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
ART Before	.204	18	.045	.898	18	.052
ART After	.243	18	.006	.860	18	.012

Source: Author, SPSS

Table 4.10 present that based on Shapiro-Wilk test, the Sig (p -value) for ARTO before is 0.052 and ARTO after is 0.012. Comparing those Figures to the standard significance level α , which is 0.05, the ARTO before is greater than α

(Normally Distributed), yet the ARTO after is less than α (Not Normally Distributed). Conservatively, since one of the variables (ARTO after) is non-normal, the most conservative and appropriate approach is usually to use a non-parametric test for the comparison.

Therefore, the non-parametric Wilcoxon Signed-Rank Test was selected as the suitable statistical method for this investigation. The data obtained from this technique are systematically shown in Table 4.11. These findings provide the evidence to support the next steps in evaluating the data.

Table 4.11: ARTO's Wilcoxon Test Result

ART After - ART Before	
Statistic	Value
Z	-3.724
Asymp. Sig. (2-tailed)	<.001

Source: Author, SPSS

Based on Table 4.11, the significance value (p -value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_3 is accepted.

Beside ARTO, this study also categorized Inventory Turnover (ITO) and Total Asset Turnover (TATO) in Activity Performance. Using the research framework in Figure 3.1, we examined the ITO data in Figure 4.6 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.12.

Table 4.12: Normality Test for ITO

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
ITO Before	.091	18	.200	.974	18	.865
ITO After	.159	18	.200	.943	18	.332

Source: Author, SPSS

Both the ITO Before (0.865) and ITO After (0.332) variables have Shapiro-Wilk p -value that are greater than the standard significance level α , which is 0.05. Therefore, both datasets are consistent with a normal distribution. Since both variables qualified for the assumption of normality, the appropriate test applied was The Paired-Samples t -test, to compare the correlation of ITO Before and ITO After. Table 4.13 was resulted by the test.

Table 4.13: ITO's Paired t -test Result

					95% Confidence Interval of the Difference				Significance	
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	ITO Before - ITO After	3.01667	2.56274	.60404	1.74225	4.29109	4.994	17	<.001	<.001

Source: Author, SPSS

Based on Table 4.13, the significance value (p -value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_3 is accepted.

The last ratio categorized in Activity performance is TATO. Using the research framework in Figure 3.1, we examined the TATO data in Figure 4.7 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.14.

Table 4.14: Normality Test for TATO

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
TATO Before	.189	18	.087	.896	18	.049
TATO After	.156	18	.200	.902	18	.063

Source: Author, SPSS

Table 4.14 present that based on Shapiro-Wilk test, the Sig (p -value) for TATO Before is 0.049 and TATO After is 0.063. Comparing those Figures to the standard significance level α , which is 0.05, the TATO Before is less than α (Not Normally Distributed), yet the TATO After is greater than α (Normally Distributed). Conservatively, since one of the variables (TATO Before) is non-normal, the most

conservative and appropriate approach is usually to use a non-parametric test for the comparison.

Therefore, the non-parametric Wilcoxon Signed-Rank Test was selected as the suitable statistical method for this investigation. The data obtained from this technique are systematically shown in Table 4.15. These findings provide the evidence to support the next steps in evaluating the data.

Table 4.15: TATO's Wilcoxon Rank Test Result

Statistic	TATO After - TATO Before Value
Z	-3.616
Asymp. Sig. (2-tailed)	<.001

Source: Author, SPSS

Based on Table 4.16, the significance value (ρ -value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the ρ -value is less than α . Therefore, H_3 is accepted.

4.2.4 Solvency Performance Normality Distribution Test and Hypothesis Testing Analysis

Using the research framework in Figure 3.1, we examined the Total Equity to Total Asset ratio (TETA) data in Figure 4.8 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.16.

Table 4.16: Normality Test for TETA

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
TETA Before	.122	18	.200	.927	18	.171
TETA After	.167	18	.197	.941	18	.303

Source: Author, SPSS

Both the TETA Before (0.171) and TETA After (0.303) variables have Shapiro-Wilk p -value that are greater than the standard significance level α , which is 0.05. Therefore, both datasets are consistent with a normal distribution. Since both variables qualified for the assumption of normality, the appropriate test applied was The Paired-Samples T-test, to compare the correlation of TETA Before and TETA After. Table 4.17 had resulted by the test.

Table 4.17: TETA's Pair T-test Result

					95% Confidence Interval of the Difference				Significance	
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	TETA Before - TETA After	2.91833	4.35187	1.02575	.75420	5.08247	2.845	17	.006	.011

Source: Author, SPSS

Based on Table 4.17, the significance value (p -value) of the Asymp. Sig. (2-tailed) is 0.011. Compared to standard significance level of α , which is 0.05, the p -value is greater than α . Therefore, H_4 is accepted.

4.2.5 Financial Health Analysis

Using the research framework in Figure 3.1, we examined the Altman Z-Score data in Figure 4.9 to determine if it was normally distributed. Considering the data population is 36, the proper test used was The Shapiro Wilk Test. The test had resulted Table 4.18.

Table 4.18: Normality Test for Altman Score

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Z-Score Before	.150	18	.200	.938	18	.263
Z-Score After	.205	18	.045	.918	18	.121

Source: Data Process, 2026

Both the Altman Z-Score Before (0.263) and Altman Z-Score After (0.121) variables have Shapiro-Wilk p -value that are greater than the standard significance level α , which is 0.05. Therefore, both datasets are consistent with a normal distribution. Since both variables qualified for the assumption of normality, the appropriate test applied was The Paired-Samples t-test, to compare the correlation of Altman Z-Score Before and Altman Z-Score After. The test resulted by Table 4.19.

Table 4.19: Altman Score Pair T-test Result

					95% Confidence Interval of the Difference				Significance	
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	Z-Score Before -Z-Score After	-.36833	.40726	.09599	-.57086	-.16581	-3.837	17	<.001	<.001

Source: Data Process, 2026

Based on Table 4.19, the significance value (p -value) of the Asymp. Sig. (2-tailed) is < 0.001 . Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_5 is accepted.

4.2.6 Statistic Data Analysis

The data used in this research is of the type of paired data samples, so all observations are of a single company only. Next, we calculated the distribution of the data and investigated whether the distribution was normal or non-normal. This crucial step enabled us to correctly classify the dataset as parametric or non-parametric.

This systematic methodology guarantees that the statistical methods used are suitable for the type of data obtained. First, we assessed the distribution to preserve the integrity and validity of the analytical framework. Table 4.20 contains a comprehensive summary of the statistical techniques applied in this study.

Table 4.20: Statistic Recap Procedure

No	Data / Ratio	Paired/Unpaired	Normality Test		Parametric / Non-Parametric	Hypothesis Testing		
			Shapiro-Wilk Test Score	Result		Test	Score	Result
1	ROE Before	Paired	0.004	No	Non Parametric	Wilcoxon Test	0.001	Accepted
2	ROE After	Paired	0.003	No	Non Parametric			
3	ROI Before	Paired	0.005	No	Non Parametric	Wilcoxon Test	0.001	Accepted
4	ROI After	Paired	0.002	No	Non Parametric			
5	Current Ratio Before	Paired	0.553	Yes	Parametric	Paired t-Test	0.002	Accepted
6	Current Ratio After	Paired	0.699	Yes	Parametric			
7	Cash Ratio Before	Paired	0.033	No	Non Parametric	Wilcoxon Test	0.001	Accepted
8	Cash Ratio After	Paired	0.064	Yes	Parametric			
9	ARTO Before	Paired	0.052	No	Non Parametric	Wilcoxon Test	<0.001	Accepted
10	ARTO After	Paired	0.012	Yes	Parametric			
11	ITO Before	Paired	0.865	Yes	Parametric	Paired t-Test	<0.001	Accepted
12	ITO After	Paired	0.332	Yes	Parametric			
13	TATO Before	Paired	0.049	Yes	Parametric	Wilcoxon Test	<0.001	Accepted
14	TATO After	Paired	0.063	No	Non Parametric			
15	TETA Before	Paired	0.171	Yes	Parametric	Paired t-Test	0.011	Accepted
16	TETA After	Paired	0.303	Yes	Parametric			
17	Z.Score Before	Paired	0.263	Yes	Parametric	Paired t-Test	0.011	Accepted
18	Z.Score After	Paired	0.159	Yes	Parametric			

Source: Data Process, 2026

4.3 Research Evaluation

4.3.1 Research Evaluation on Profitability Performance

The improving trend of ROE after 2020 indicates that both internal and external strategies were successful, shifting the focus from crisis management to strategic efficiency. The fewer negative ROE quarters show that the government's strategy of compensating PLN for its public service obligation has become more reliable. This regulatory support provides the corporation a crucial safety net that lets it maintain its modest margins.

PLN Mobile's launch in late 2020 was a significant accomplishment to make the company more efficient. By shifting interactions with consumers (billing, complaints, new connections) to a digital platform, PLN was able to save costs in the most basic way. These savings serve as a permanent, internal buffer against shocks from outside sources, keeping costs from reducing the profit margin. For the government, a stable positive ROE, even if it's relatively small, shows that the company is financially healthy.

The ROI is the most important way to assess how effective management is running the company. Figure 4.1 and Figure 4.2 show the ROI is slightly more stable compared to the ROE. It implied that PLN's main issues are with its financial structure, such as foreign debt and foreign exchange exposure, not with how well it runs its business.

The increasing ROI after 2020 also indicates a connection between digital strategy and financial performance. PLN Mobile's launched in late 2020 made it possible for the company to manage customer support and billing at a less cost. This efficiency in operating costs directly increased the net income. The solid ROI performance also can be an indicator for investor to invest in the company for future investments.

Based on Table 4.3 and Table 4.5, both p -values, 0.001 and 0.001 are less than the significance level of α , therefore the hypothesis, H_1 , is accepted. The fact that the change was statistically significant (p -value < 0.05) is an important piece of information. it shows that the company was able to successfully implement the digital application without hurting its core profitability.

This consistency shows that the company has kept a strong base during the first phase of the digital transition. The analysis doesn't show a substantial rise in ROE yet, but the fact that things are staying stable is very positive. This outcome means that the next step must be to focus on making the digital application as profitable as possible.

4.3.2 Research Evaluation on Liquidity Performance

The fact that PLN Mobile has been successful to keep growing since 2022 is the strongest evidence of its financial success. The mobile application allows people make payments via mobile devices, which speeds up the cash conversion cycle by making it faster for client payments to reach PLN's bank accounts or Current Assets. As an SOE, PLN can operate with a lower tolerance than a commercial business because the state essentially guarantees its debts.

However, an increase above 100% shows that management might rely less on the state for daily operating liquidity, which improves internal financial discipline. The stability tendency helps PLN stay financially strong in the short term. So that it can handle stresses from outside sources (such currency depreciation or small declines in demand) without needing quick bailouts or emergency finance.

The cash ratio offers an alternative perspective on how effectively the company's digital strategy influences treasury operations and risk management. Specifically, the implementation of PLN Mobile has significantly enhanced the current ratio by accelerating the conversion of accounts receivable into liquid cash. This improvement underscores the positive impact that the digital transition has had on the company's overall liquidity efficiency.

This creates a complex financial dynamic as the application has a subtle impact on the Cash Ratio. The technology permits more regular and speedier collection of smaller quantities of cash and successfully mitigates the danger of time inconsistencies. But it does not change the basic business model in which most of the liquidity risk remains related to the timing of large, non-operating government payments.

The implied State guarantee makes it tolerable that PLN has a relatively low Cash Ratio (usually 15-30%). Holding excess cash is considered as wasteful since it incurs unnecessary opportunity costs for the firm. Hence, this low ratio indicates that the management's goal is to be efficient in operations than to accumulate idle capital.

From the external view, this low ratio is often present in major SOEs. But the measure nevertheless signals big short-term risk for commercial lenders, especially for players in foreign bond markets. So in summary, what we see is a volatility that indicates a treasury that is very reactive to external factors and not very proactive in managing cash flow.

Based on Table 4.7 and Table 4.9, both p -values, 0.002 and 0.001 are less than the significance level of α , therefore the hypothesis, H_2 , is accepted. The fact that the change was statistically significant (p -value < 0.05) also indicates a significant level of financial stability following to the implementation of the digital mobile application. Both tests suggest that the company's short-term liquidity position remained constant and steady, with no statistically significant impact on the capacity to pay off debts immediately.

The fact that these ratios remain unchanged much is an indicator of stability. It indicates that the transition to a digital platform managed without causing too much pressure on the company's working capital or cash reserves. The organization has established a safe place for future growth by maintaining this solid liquidity base. These results suggest that the digital foundation is now securely in place, providing the company the financial flexibility required to make better use of its assets and improve its operations in the future. The study indicates that a "stability-first" approach to digital transformation works well.

4.3.3 Research Evaluation on Activity Performance

The PLN Mobile Implementation (2020Q4) and the wider digitization of customer behaviour are the main reasons for this development. Before the PLN Mobile was applied, billing required reading meters manually by hand and processing payments required physical presence, which added "dead days" to the collection cycle. The PLN Mobile lets you bill right away and self-meter digitally, which starts the "clock" on the collecting period considerably sooner.

The company eliminated of the physical obstacles to payment by adding different digital payment methods to the PLN Mobile. Customers can pay whenever and wherever they want, which naturally leads the ARTO to the less than 20 days. The declining trend suggests the push for prepaid meters and more aggressive

digital reminders for postpaid customers is successful. Prepaid revenue has a ARTO of zero, causing the entire corporation average decline down significantly.

PLN Mobile made payments easier, which helped the "Revenue" side of the equation. However, the huge increase in efficiency in 2021 was due to the backend digital transformation. PLN sped up its "Smart Supply Chain" and "Digital Procurement" projects in 2021 and 2022 (Kusuma, 2024).

This featured a Demand Forecast module that used AI and application to create accurate forecasts about what materials would be needed based on historical data. In 2024, PLN made Rp545.4 trillion, which was an 11.9% growth. The company was able to keep its ITO days relatively low even though it had to raise its physical inventory to support customers because its sales (the denominator) grew a lot.

The PLN Mobile Super App and the digital revolution that followed with it are the main reasons for this increase in turnover. PLN has cut down on "lost revenue" and sped up the process of turning service into recognized sales by making the "Meter-to-Cash" cycle more efficient with digital accounts. PLN now has more than 92 million customers.

PLN can handle this huge growth without having to hire more people or build more physical "Capital Employed" (such billing offices or manual meter-reading equipment) because to the digital platform. The app has also changed PLN from just a "vendor of electricity" to a "service platform." New sources of income, like Beyond kWh services, use the company's current assets to make more money. This mathematically raises the TATO ratio.

Based on Table 4.11, Table 4.13 and Table 4.15, all p-values are less than 0.001, are less than the significance level of α , therefore the hypothesis, H3, is accepted. The Activity Performance analysis, which looked at Account Receivables Turnover (ARTO), Inventory Turnover (ITO), and Total Asset Turnover (TATO), showed very significant results ($p < 0.001$ for all three variables). This high degree of statistical significance is a good sign that things are getting clearer.

It shows that the digital mobile app is actively changing the way the organization works, giving management clear and useful data for the first time. These results show that the "Calibration Phase" was successful. The big changes in turnovers show that the supply chain and credit systems are being updated as the company moves to a digital ecosystem.

This time is a very important investment in the company's digital growth since it lets them find and fix any problems with how the new mobile platform works with their physical assets. In the end, these results give people power. PLN has gotten a precise plan for its future phase by figuring out exactly how the digital shift influences the transfer of assets and inventories.

The organization can now methodically increase efficiency and get the most out of its digital investments by using this high-quality data rather than guesswork. This study represents the final conclusion of the Insight Phase and a stimulus for a new era of data-driven operational excellence. Ultimately, the results give the management the opportunity to move from a reactive to a proactive and performance-oriented strategic framework for decision-making.

4.3.4 Research Evaluation on Solvency Performance

The PLN Mobile Super App and the larger digital revolution have made TETA more stable by making it more profitable and efficient. PLN made a record Rp545.4 trillion in sales and Rp17.7 trillion in net profit in 2024. The "Equity" side of the balance sheet gets these gains right away, which naturally makes the TETA ratio stronger without the government having to put in more money.

There was also a strategy called "Cash War." To keep PLN from going bankrupt, the management started a "cash war" to control cash flow and manage debt proactively. The business might avoid taking on new short-term debt by adopting digital methods to collect cash faster (as discussed earlier in ARTO).

This would keep the "Liabilities" part of its assets under control. As we saw before, the TATO got a lot better in relation to TATO. The company can develop without having to buy as many new physical assets when its assets become better

at making money. This keeps the "Total Assets" denominator from growing faster than equity growth.

Based on Table 4.17, p -values is 0.011 and it is greater than the significance level of α , therefore the hypothesis, H4, is accepted. The analysis of Solvency Performance, defined by the Total Equity to Total Assets (TETA) ratio, produced a statistically significant outcome ($p = 0.011$). The finding is a significant strategic signal.

It suggests that the digital mobile app has grown to a stage where it is actively affecting the company's overall financial structure. This level of understanding makes institutions more aware of what's going on and enables them to decide better financial decisions.

The significant shift in the TETA ratio indicates that capital is shifting around quite frequently right now. As PLN allocates capital into its digital environment, the balance between assets and equity inevitably changes to help this growth. This significance shows that the digital transition isn't just a change on the surface; it's a major change in how the organization utilizes its assets to create long-term value for its stakeholders.

In the end, this product is a tool for proactive management. By spotting this tendency early on through careful statistical testing, PLN can now adjust its capital allocation approach with great accuracy. This ensures the digital transformation on a strong and long-lasting path, and these data-driven insights assist the company have a strong and balanced financial position as it grows its digital capabilities.

4.3.5 Research Evaluation on Financial Health

The change in the Z-Score is not a coincidence. it shows that the digital initiatives PLN Mobile have worked in four areas: liquidity, retained earnings, operating efficiency, and solvency. Digital payment systems made the Collection Period much shorter, which increased the "Working Capital" part from a liquidity point of view.

This probably stopped the dip in 2020 from turning into a liquidity catastrophe. For Retained Earnings, efficiency increases after 2020 cut down on

waste in the business, which meant that PLN could keep more of its profits instead of losing them to excessive overhead. From the point of view of operating efficiency, the score's recovery is linked to a higher total asset turnover.

PLN made higher "Operating Profit" for every Rupiah of assets by digitizing maintenance and grid management. In terms of solvency, equity became stronger compared to debt during the digital age. This is the most important component in keeping the Z-score above the "Safe" threshold of 5.85.

Based on Table 4.19, the significance value (p -value) of the Asymp. Sig. (2-tailed) is <0.001 . Compared to standard significance level of α , which is 0.05, the p -value is less than α . Therefore, H_5 is accepted.

The Altman Z-Score model ($p < 0.001$) shows that the organization's overall financial health is in a condition of remarkable and steady stability. This p -value shows that the company's basic financial health has stayed the same during the adoption of the digital mobile app. This result is quite encouraging since it shows that PLN was able to adapt to a big change in technology without putting its long-term financial security at risk.

It shows clearly that the person in charge of the money was careful. The corporation was able to come up with new customer-facing technology and put it into use without putting its overall bankruptcy-remote position at risk. In the end, an organization that can keep its Z-Score the same after a big project shows how strong it is.

The data presented shows that the mobile application has a solid financial foundation. The results provide an important reassurance to stakeholders that the organization is making good progress on its modernisation agenda. And most crucially, this shift is happening without sacrificing the company's long-term financial health or structure.

4.3.6 Dupont Analysis Result

The trajectory of the Altman Z-Score (figure 4.19) is the most significant factor to look at. The score continued to decline down from 2016 to early 2020, reaching a concerning low of 5.41. The orange line indicates that the PLN was

mathematically projected toward the Distress Zone (< 4.15) without the PLN Mobile implementation.

The DuPont Analysis indicates exactly why the grey "After" line shifted up. The recovery was driven by operations:

- Profit Margin and Asset Turnover improvements contributed to 72% of the rebound.
- Only a small portion (8%) is caused by higher Financial Leverage (Equity Multiplier). This shows that going digital made the business "smarter," not just "more in debt."

CHAPTER 5: CONCLUSION AND RECOMMENDATION

In this research, 5 hypotheses have been analysed and evaluated throughout the previous chapters. This study has accomplished its objective of defining research questions and hypotheses by examining all the variables that are involved. Here are the research conclusions and recommendations.

5.1 Research Conclusion

Based on the research objectives and the results of the researched hypotheses, several major conclusions are drawn. The results are the direct outcome of the empirical analysis performed in the study. The key findings achieved from this study are summarized in the following sections.

5.1.1 Research Conclusion on Profitability Performance

Regarding the first research objective, to measure, analyse, evaluate and compare PLN profitability performances before and after the implementation of PLN Mobile application, this research has conducted a series of assessments and followed by statistical testing, which resulted p -values are less than the significance level of α . Therefore, the research hypothesis H_1 is accepted, leading to the conclusion, that the PLN profitability performances after the implementation of PLN mobile application is better compared to before the implementation of PLN Mobile.

5.1.2 Research Conclusion on Liquidity Performance

Regarding the second research objective, to measure, analyse, evaluate and compare PLN liquidity performances before and after the implementation of PLN Mobile application, this research has conducted a series of assessments and followed by statistical testing, which resulted p -values are less than the significance level of α . Therefore, the research hypothesis H_2 is accepted, leading to the conclusion, that the PLN liquidity performances after the implementation of PLN mobile application is better compared to before the implementation of PLN Mobile.

5.1.3 Research Conclusion on Activity Performance

Regarding the third research objective, to measure, analyse, evaluate and compare PLN activity performances before and after the implementation of PLN Mobile application, this research has conducted a series of assessments and followed by statistical testing, which resulted p -values are less than the significance level of α . Therefore, the research hypothesis H3 is accepted, leading to the conclusion, that the PLN activity performances after the implementation of PLN mobile application is better compared to before the implementation of PLN Mobile.

5.1.4 Research Conclusion on Solvency Performance

Regarding the fourth research objective, to measure, analyse, evaluate and compare PLN solvency performances before and after the implementation of PLN Mobile application, this research has conducted a series of assessments and followed by statistical testing, which resulted p -values is less than the significance level of α . Therefore, the research hypothesis H4 is accepted, leading to the conclusion, that the PLN solvency performances after the implementation of PLN mobile application is better compared to before the implementation of PLN Mobile.

5.1.5 Research Conclusion on Financial Health

Regarding the fifth research objective, to measure, analyse, evaluate and compare PLN financial health before and after the implementation of PLN Mobile application, this research has conducted a series of assessments and followed by statistical testing, which resulted p -values is less than the significance level of α . Therefore, the research hypothesis H5 is accepted, leading to the conclusion, that the PLN financial health after the implementation of PLN mobile application is better compared to before the implementation of PLN Mobile.

5.2 Research Implications

5.2.1 The Theoretical Implications

Validation of Digital Application in State Owned Enterprise: While the majority of competitive private-sector tech startups routinely utilize digital applications to drive their business models, empirical evidence in this area remains limited for large-scale entities. This research bridges that gap by offering concrete proof that even massive state-owned enterprises can successfully leverage digital

applications to enhance corporate performance. Consequently, the study demonstrates that digital transformation is a viable and effective strategy for improving financial outcomes, regardless of the organization's size or ownership structure.

Resource-Based View: This research reinforces the concept that digital assets, such as the mobile application, function as strategic resources that provide a distinct competitive advantage. It illustrates that the true value of a digital application extends beyond mere service delivery to include its role as a financial catalyst. Ultimately, this tool acts as a critical mechanism that optimizes the entire value chain within the organization.

Altman Z-Score Application in SOEs: This research contributes to the methodology of bankruptcy risk assessment by effectively applying the Altman Z"-Score model to large-scale non-manufacturing state companies. This methodology becomes useful in efficiently tracking a whole decade of financial performance data. Therefore, this study offers a validated analytical approach to assess the insolvency risk of similar huge government-owned organizations.

Operational efficiency works: The results of this research contribute to the current literature by showing that operational efficiency can increase at the same time the Return on Equity and the main indicators of solvency. It gives important insights about the relationship between digital transformation and the long-term financial sustainability of large public utilities. Therefore, these findings provide an interesting view of the effect of modernized business practices on sustainable corporate performance.

5.2.2 Shareholder Implications for The Government of Indonesia

Better Dividend Potential: The improved Net Profit Margin of the corporation shows a greater ability to pay dividends to the state. This financial support is one of the important factors in the stability and growth of the national budget. So, the firm's increased profitability is directly in line with broader public fiscal objectives.

Improved National Credit Rating: With the main utility's financial condition stabilizing, the risk to the nation's infrastructure sector drops substantially. The

enhancement makes the whole environment more attractive to capital investment. Ultimately, a better financial condition for the utility would help improve the broader investment climate in the country.”.

Leverage for National Economic Growth: PT PLN is a Public Service Obligation (PSO) entity of the Government of Indonesia in the electricity sector operating under a carefully controlled tariff regime as an arm’s length entity. Thus, it is the natural and necessary duty of the government to improve the financial results of the corporation by means of subsidies and compensation in a methodical manner. This support structure enables the utility to continue its operations and achieve its public responsibilities under the constraints of regulated pricing.

5.2.3 Stakeholder Implications for Customers, Vendors, and Employees

The stakeholders are the several groups affected by the company’s operations and business activity. These persons or entities do not have an ownership interest in the organization, as shareholders do. Their relationship to the company is determined by the effect of a company’s performance and decisions on their own particular interests.

For Customers in term of Service Quality: The company has a successful turnaround to a "Safe Zone" financial condition and has the capital to update and maintain vital infrastructure. This greater financial stability translates directly into fewer outages across the grid. This enables the organization to serve the public with a more uniform and reliable supply of electricity.

For Vendors in term of Payment Reliability: The significant improvement in both the Collection Period (COP) and Liquidity Ratios suggests that the company is now in a stronger position to meet its short-term financial obligations to vendors and contractors. By stabilizing these payment cycles, the organization is effectively helping the long-term health and stability of its broader vendor ecosystem. Ultimately, this increased reliability helps build a more lasting and collaborative connection between the organization and its external service suppliers.

For Employees in term of Digital Productivity: The DuPont research shows that the increase in revenue registered was mostly due to the increased operational

efficiency by 72% and not only personnel augmentation. In other words, digital transformation equips staff with the ability to process increasing transaction volumes with improved accuracy. The technology thereby reduces human “friction” in a meaningful way, enabling the company to over-perform with the human capital it already possesses.

5.2.4 Management & Strategic Implications for Internal Decision Makers

These are "Actionable Insights" that the Board and Executives can use.

Integration of KPI Based on Data: The study suggests the Altman Z-Score of 5.85 be used as a key “Red Flag” indicator or a formal internal KPI. This threshold gives management an excellent proactive tool to track performance trends. This indicator acts as a critical protection to ensure that the business does not revert back to the susceptible “Grey Zone” of financial instability.

Intensive vs. Extensive Growth: The results indicate that “Intensive Growth” model, which involves using digital tools to improve the efficiency of existing assets, is a better financial result than “Extensive Growth” model, which is the growth of plants through incurring debts. The analysis shows that a focus on digital integration is a more successful strategy for long-term fiscal health than conventional, capital-intensive approaches. Therefore, digital transformation needs to be the main investment priority for future organizational development.

Treasury Optimization: The application provides managers with the ability to see consistent, real time cash flow statistics. This insight enables the corporation to shift towards a more aggressive “High Velocity Treasury” approach, increasing overall liquidity management. As a result, the company is more able to utilize excess money for the rapid reduction of high-interest debt obligations.

5.3 Research Recommendations

In overall, this research shows that PT PLN has to change the perception of digitization from a “supporting function” to a Core Financial Asset. The data shows that every rupiah spent in the digital ecosystem significantly improves cash flow and solvency more than the construction of traditional physical infrastructure. In the end, the evidence suggests that long-term fiscal health is better served by prioritizing digital integration over traditional capital demanding approaches.

5.3.1 Management & Operational Recommendations

The corporation should formalize the “Financial Health Dashboard” by incorporating the Altman Z-Score as a regular feature of its monthly management reports. In particular, this system shall work as a “Early Warning System” with an internal threshold of 5.85, the established transition point. By embracing this statistic, management will be equipped to proactively reduce expenses and protect the firm before it slips back into the fragile 'Grey Zone.'

The mobile application has a beneficial impact on the Account Receivables Turnover and liquidity position of the organization. To get better outcomes, the treasury department should gradually do away with manual billing of its 92 million customers and switch to autopayments embedded in apps. This smart move will greatly cut down the friction inside the IDR 25 trillion receivable portfolio.

The DuPont Analysis shows that 72% of the company’s recent growth was operational efficiency, not debt. And management needs to focus on diverting funds to OPEX for software and AI upgrades, rather than locking up capital in large CAPEX projects for interest-bearing physical infrastructure. The change in investment approach will be more conducive to sustained financial success by preferring efficiency over capital intensive expansion.

5.3.2 Shareholder & Policy Recommendations

The Ministry of SOE should use this research as a “Proof of Concept” to require other utilities like as water, logistics and transit to follow similar digital reforms. The organizational focus must move from technology as a means to “Digital for Service” to “Digital for Solvency.” The ministry can now lead the systemic improvements in the financial performance of the whole infrastructure sector with this strategy shift.

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5.3.3 Stakeholder & Strategic Recommendations

The organization should begin a “Green Digital Initiative”. The organization has become more financially stable as the Z-Score has increased from 5.41 to 6.81, which is the “financial oxygen” needed to invest in the Energy Transition. For this digital transformation to generate real environmental value, the application could be developed with features such as carbon footprint tracking or the issuance of renewable energy certificates. The strategic integration will successfully match the firm’s digital capabilities with its long-term commitment to sustainable energy practices.

The corporation should use its better liquidity ratios to create a “Payment to Vendor” portal within its existing digital ecosystem. This platform will boost transparency by simplifying payments exclusively for contractors that achieve the organization’s stringent sustainability standards. Ultimately, this effort rewards improved performance and encourages a more efficient and collaborative relationship with the vendor community.

5.3.4 Future Research Recommendations

Future work may apply longitudinal study of the user experience and interface design of the program to discover important performance determinants. In particular, this research needs to identify which features, e.g. the ease of use of the UI versus the technical capabilities of the UI, are most strongly correlated with an expedited speed of payment. By knowing these drivers, the firm will better understand what digital design features promote financial performance.

Researchers should repeat this longitudinal study of 2016-2025 in other monopolistic businesses to compare across sectors. The purpose of this activity is to find out whether the observed “Digital Dividend” is a general principle of all state-owned firms or a phenomenon specific to the power industry. By expanding the scope of this analysis, scholars can better understand the broader implications of digital transformation on state-led utilities.

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APPENDIXES

Appendix A: Normality Test (Shapiro Wilk Test) of Return on Equity

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROE Before	.306	18	<.001	.830	18	.004
ROE After	.257	18	.003	.816	18	.003

a. Lilliefors Significance Correction

Appendix B: Hypothesis Testing (Wilcoxon Test) of Return on Equity

Test Statistics ^a	
	ROE After - ROE Before
Z	-3.180 ^b
Asymp. Sig. (2-tailed)	.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix C: Normality Test (Shapiro Wilk Test) Return on Investment

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROI Before	.302	18	<.001	.836	18	.005
ROI After	.263	18	.002	.814	18	.002

a. Lilliefors Significance Correction

Appendix D: Hypothesis Testing (Wilcoxon Test) of Return on Investment

Test Statistics^a

	ROI After - ROI Before
Z	-3.627 ^b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix E: Normality Test (Shapiro Wilk Test) of Current Ratio

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CurrRat Before	.150	18	.200 [*]	.957	18	.553
CurrRat After	.141	18	.200 [*]	.965	18	.699

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix F: Hypothesis Testing (Paired t-test) of Current Ratio

Paired Samples Test									
		Paired Differences				Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	t	df	One-Sided p	Two-Sided p
Pair 1	CurrRat Before - CurrRat After	-7.79222	8.88473	2.09415	Lower -12.21049 Upper -3.37395	-3.721	17	<.001	.002

Appendix G: Normality Test (Shapiro Wilk Test) of Cash Ratio

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CashRat Before	.171	18	.172	.886	18	.033
CashRat After	.175	18	.149	.903	18	.064

a. Lilliefors Significance Correction

Appendix H: Hypothesis Testing (Wilcoxon Test) of Cash Ratio

Test Statistics^a

	CashRat After - CashRat Before
Z	-3.724 ^b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix I: Normality Test (Shapiro Wilk Test) of Account Receivables Turnover

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ART_Before	.204	18	.045	.898	18	.052
ART_After	.243	18	.006	.860	18	.012

a. Lilliefors Significance Correction

Appendix J: Hypothesis Testing (Wilcoxon Test) of Account Receivables Turnover

Test Statistics^a

	ART_After - ART_Before
Z	-3.724 ^b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Appendix K: Normality Test (Shapiro Wilk Test) of Inventory Turnover

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ITO Before	.091	18	.200 [*]	.974	18	.865
ITO After	.159	18	.200 [*]	.943	18	.332

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix L: Hypothesis Testing (Paired t-test) of Inventory Turnover

Paired Samples Test										
Paired Differences							Significance			
			95% Confidence Interval of the Difference							
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p	
Pair 1 ITO Before - ITO After	3.01667	2.56274	.60404	1.74225	4.29109	4.994	17	<,.001	<,.001	

Appendix M: Normality Test (Shapiro Wilk Test) of Total Asset Turnover

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TATO Before	.189	18	.087	.896	18	.049
TATO After	.156	18	.200 [*]	.902	18	.063

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix N: Hypothesis Testing (Wilcoxon Test) of Total Asset Turnover

Test Statistics ^a	
	TATO After - TATO Before
Z	-3.616 ^b
Asymp. Sig. (2-tailed)	<,.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix O: Normality Test (Shapiro Wilk Test) of Total Equity of Total Asset

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TETA Before	.122	18	.200 [*]	.927	18	.171
TETA After	.167	18	.197	.941	18	.303

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix P: Hypothesis Testing (Paired t-test) of Total Equity to Total Asset

Paired Samples Test									
		Paired Differences				Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	
					Lower	Upper			One-Sided p Two-Sided p
Pair 1	TETA Before - TETA After	2.91833	4.35187	1.02575	.75420	5.08247	2.845	17	.006 .011

Appendix Q: Normality Test (Shapiro Wilk Test) of Altman Z-Score

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ZScoreBefore	.150	18	.200 [*]	.938	18	.263
ZScoreAfter	.205	18	.045	.918	18	.121

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix R: Hypothesis testing (Paired t-test) of Altman Z-Score

Paired Samples Test									
		Paired Differences				Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	
					Lower	Upper			One-Sided p Two-Sided p
Pair 1	ZScoreBefore - ZScoreAfter	-.36833	.40726	.09599	-.57086	-.16581	-3.837	17	<.001 .001