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STRATEGIC INVESTMENT DECISION AND EVALUATION TO ACQUIRE 1,000 TON LAUNCHER GANTRY FOR TOLL ROAD HARBOUR ROAD PROJECT OF PT WIJAYA KARYA (PERSERO), TBK.

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CHAPTER 1.

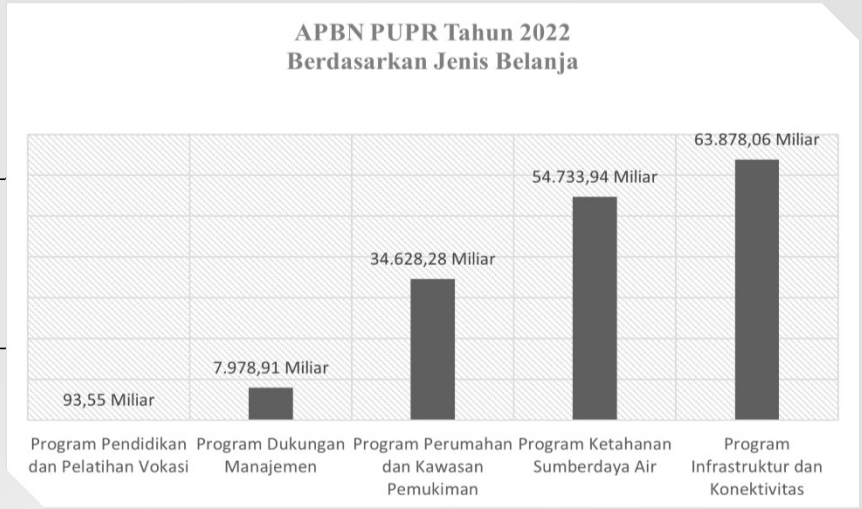
INTRODUCTION

BACKGROUND

The construction sector is the fifth-largest contributor to Indonesian GDP. In 2022, the construction sector contributed 9.77% of GDP

The growth of this industry is supported by the government's goal through the PUPR Ministry of Public Works and People's Housing to develop the nursery infrastructure to improve its connectivity.

In 2022 The largest allocated budget for connectivity infrastructure programs → **Rp 63,878,06 billion or 39.60%**



Source: Ministry of Public Works and People's Housing Budget Report, 2021

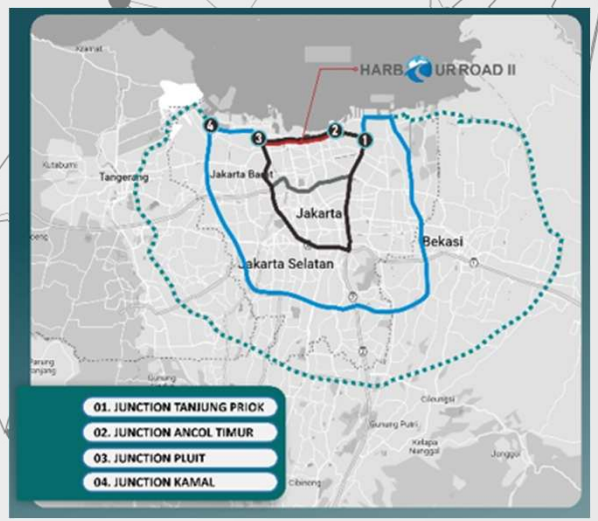
Source : Badan Pusat Statistik Indonesia, 2022

The increased mobility of the population is aligned with the growth and development of residential and industrial areas in urban areas

With increasing population growth, it requires adequate means and means of transportation

2021 - 2022 **272,68 million** → **275,773 million ⇧ 1,13%**

BACKGROUND



Jabodetabek (Jakarta, Bogor, Depok, Tangerang, and Bekasi) has four Main Ring Road networks, namely RING-1 (DKI 6 Toll Road), RING-2 (JIUT), Ring-3 (JORR1), and RING-4 (JORR2). On the **Harbour Road I Toll Road**, there has been a significant increase in vehicle volume

Increased service capacity with the construction of the Harbour Road II

PROJECT DESCRIPTION

Project Name
Proyek Pembangunan Jalan Tol Ancol Timur – Pluit (Elevated)

Project Owner
PT. Citra Marga Nusaphala Persada Tbk. (CMNP)

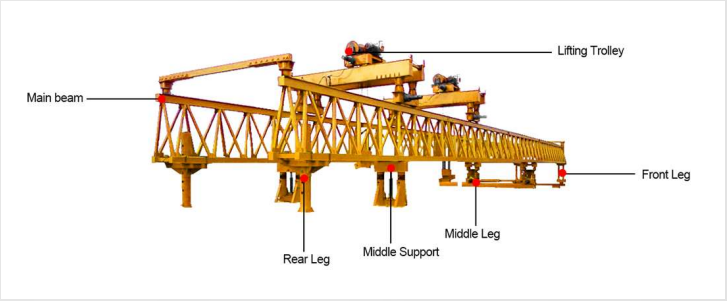
Contractor
PT Wijaya Karya (Persero) Tbk (Wika)

Kontrak Value
Rp 5.022.599.598.182 (Excld. PPN)

Project Duration
1.825 calender days

RESEARCH GAP

The typical bridge structure uses a Segment Box Girder (SBG) span type with a span of 47 m.
The erection concept for the box girder structure uses a span-by-span system with **Launching Gantry**



The total load of 1 span reaches 1,000 tons, where the equipment currently available in Indonesia is only **1 unit**.
In the planning for the construction of Harbor Road II, which must be completed within 36 months, **Wika requires a total of two Launcher Gantries (LG).**

No.	Ownership	Capacity	Brand	Number of Units	Max. Span
1.	WITON	830 Ton	Tolian	1	50 m
2.	WITON	650 Ton	Liando	5	40 m
3.	GI	850 Ton	Liando	1	50 m
4.	GI	850 Ton	Tolian	1	50 m
5.	WIKON	1,000 Ton	Comtec	1	50 m
6.	WIKON	800 Ton	Comtec	1	50 m
7.	WIKON	650 Ton	Comtec	3	43 m
8.	PP	860 Ton	Comtec	2	50 m
9.	PANCANG SAKTI	860 Ton	Comtec	1	50 m
10.	JAKON-ADHI KSO	860 Ton	Comtec	7	50 m

Source: Wika Supply Chain Management, 2023

RESEARCH GAP

Research Question	Research Objective
What is the most suitable operational strategy should be implemented by Wika management to acquire the 1,000 Ton Launcher Gantry on the Harbor Road 2 Toll Road Project of Wika?	To Analyze and evaluate the most suitable operational strategy should be implemented by Wika management to acquire the 1,000 Ton Launcher Gantry on the Harbor Road 2 Toll Road Project of Wika.
How to measure and evaluate the feasibility of investing in the 1,000 Ton Launcher Gantry on the Harbor Road 2 Toll Road Project of Wika?	To Measure and evaluate the feasibility of investing in the 1,000 Ton Launcher Gantry on the Harbor Road 2 Toll Road Project of Wika.
How does the 1,000 Ton Launcher Gantry investment help Wika in supporting the aspects of the Sustainable Development Goals?	To find out the 1,000 Ton Launcher Gantry investment help Wika in supporting the aspects of the Sustainable Development Goals?

Scope and Limitation of The Study

1. Focus: Investment in 1,000 Ton Launcher Gantry by PT Wijaya Karya (Persero), Tbk.
2. The study is limited to the Harbor Road 2 Toll Road Project (2025).
3. PT Wijaya Karya Rekayasa Konstruksi (WIKON) is the only company in Indonesia with a 1,000 Ton Launcher Gantry.
4. Assumptions: Market conditions and regional regulations may change, affecting the study.

Previous Research

Author	Variables	Findings
Hollis, M., Daryanto, W. M., & Zulkifli, M. (2022)	Payback Period, ROI, NPV, IRR, Monte Carlo	Positive NPV, Payback Period < 1 year, SDG Goal No. 5
Merzy, A. M., & Daryanto, W. M. (2018)	Payback Period, ROI, NPV, PESTEL	Payback Period < 5 years, ROI > 10%
Mentari, D., & Daryanto, W. M. (2018)	NPV, IRR, WACC, Profitability Index	ROI: 23%, NPV Index: 144.59%, IRR: 22.10%
Irawati, W., & Daryanto, W. M. (2018)	Payback Period, NPV, PI, IRR	Payback Period: 3.41 years, ROI: 33.18%, NPV: IDR 10.2B
Irawati, W., & Daryanto, W. M. (2018)	IRR, NPV, Payback Period, ROI, Monte Carlo	RR: 29.5%, NPV: IDR 68.2B, ROI: 52%, SDG Goal No. 12

Capital Budgeting Focus:

- Most studies use quantitative methods like **Payback Period**, **NPV**, **IRR**, and **ROI** to evaluate project feasibility.
- Many studies also incorporate **Non-Monetary Analysis** and align projects with **SDGs**.

Strategic and Non-Monetary Aspects:

- Some studies, like **Hollis et al. (2022)**, integrate **SWOT analysis** and strategic assessments for long-term project viability.
- **SDGs** are considered, focusing on resource management and sustainability.

Benefit of The Study

Theoretical Contribution

- Serves as a reference for future research on integrating non-monetary, quantitative, and strategic approaches in capital investment decisions.

Practical Contribution

- Assist PT Wijaya Karya (Persero), Tbk. In assessing the feasibility of the 1,000 Ton LG investment.

Thesis Structure

Chapter I: Introduction

- Research background, company context
- Problem statement, research questions, objectives
- Scope of the study, contributions to research
- Significance of the study, thesis overview

Chapter II: Conceptual Framework & Literature Review

- Review of theoretical framework
- Relevant literature to guide research direction

Chapter III: Methodology

- Research methods and techniques
- Approach to analyze the problem

Chapter IV: Data Analysis

- Insights from interviews and calculations
- Sensitivity and non-monetary analysis
- Answers to research questions

Chapter V: Conclusion & Recommendations

- Summary of findings
- Recommendations for the company
- Future research suggestions

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CHAPTER 2.

LITERATURE REVIEW

SWOT ANALYSIS

What is SWOT Analysis ?

SWOT Aanalysis framework is a very important and useful tool to use in marketing management and other business applications (Freddy Rangkuti, 2002)

Planning tool used to understand **Strength, Weakness, Opportunities and Threats** involved in a project / business (Rochman, 2019)

Used as **framework for organizing** and using data and information gained from situation analysis of **internal and external environment**

CAPITAL BUDGETING

WHAT IS CAPITAL BUDGETING?

According to Daryanto (2018), **Capital Budgeting** is a process that companies use for **decision making on capital projects** with a life of a year or more.

Capital budgeting or the process of making capital investment decisions are concerned with the **process of planning, setting goals, and priorities** (Mowen et al., 2018)

The SWOT analysis framework is adaptable and assists in creating strategies for both the organization itself and its competitive position

Capital budgeting methods are employed to assess the value of projects or assets. ***Selecting the appropriate budgeting technique can determine whether a business thrives or falters.***

CAPITAL BUDGETING

CAPITAL BUDGETNG CONSST OF

PAYBACK PERIOD (In Years)	$Payback\ Period = \frac{Original\ Investment}{Annual\ Net\ Cash\ Flow} \times 1\ year$
RETURN ON INVESTMENT (In %)	$Return\ On\ Investment = \frac{Earning\ Before\ Interest\ \&\ Tax\ (EBIT)}{Capital\ Investment}$
NET PRESENT VALUE (In IDR)	$NPV = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} - CF_0$
PROFITABILITY INDEX (In %)	$Profitability\ Index = \frac{Net\ Present\ Value}{Initial\ Investment} \times 100\%$

*Other aspect of capital budgeting are **NPV Index, Internal Rate of Return** and **Weighted Average Cost of Capital (WACC)***

Source : Daryanto, 2021

Sustainable Development Goals (SDG's)

WHAT IS SDGs?

The Sustainable Development Goals (SDGs) **are set of 17 global goals established by United Nations (UN)** in September 2015 as part of 2030 agenda for Sustainable Development (SD).

OTHER EXPLANATION

Sustainability is the capacity to create, test, and maintain adaptive capability. **Development** is the process of creating, testing, and maintaining opportunity. The combining phrase is Sustainable **Development** thus refers to the goal of fostering adaptive capabilities and creating opportunities (Holling, 2001).

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CHAPTER 3.

METHODOLOGY

Research Design

WHAT IS RESEARCH DESIGN?

Research design is a strategy for gathering, measuring, and analyzing data based on research objectives (Sekaran & Bougie, 2017)

The research design in creating this thesis **consists of the subsequent stages:**

1. **Stage 1**– Analyze and evaluate the most suitable operational strategy by the interview with Project Leader of the Company.
2. **Stage 2** – Measure and evaluate the feasibility (Quantitative Analysis)
3. **Stage 3** – Non-Monetary Analysis (Qualitatuve Analysis)

Research Design
Stage-1

A strategic analysis involves assessing both the **internal and external landscape** of the organization, appraising existing strategies, and formulating and assessing the most viable strategic alternatives.

From the Internal Environment

the factors to be assessed include operational inefficiencies, employee morale, and financial limitations.

is to determine the effectiveness of the current strategy in the context of the current environment in which the business operates.

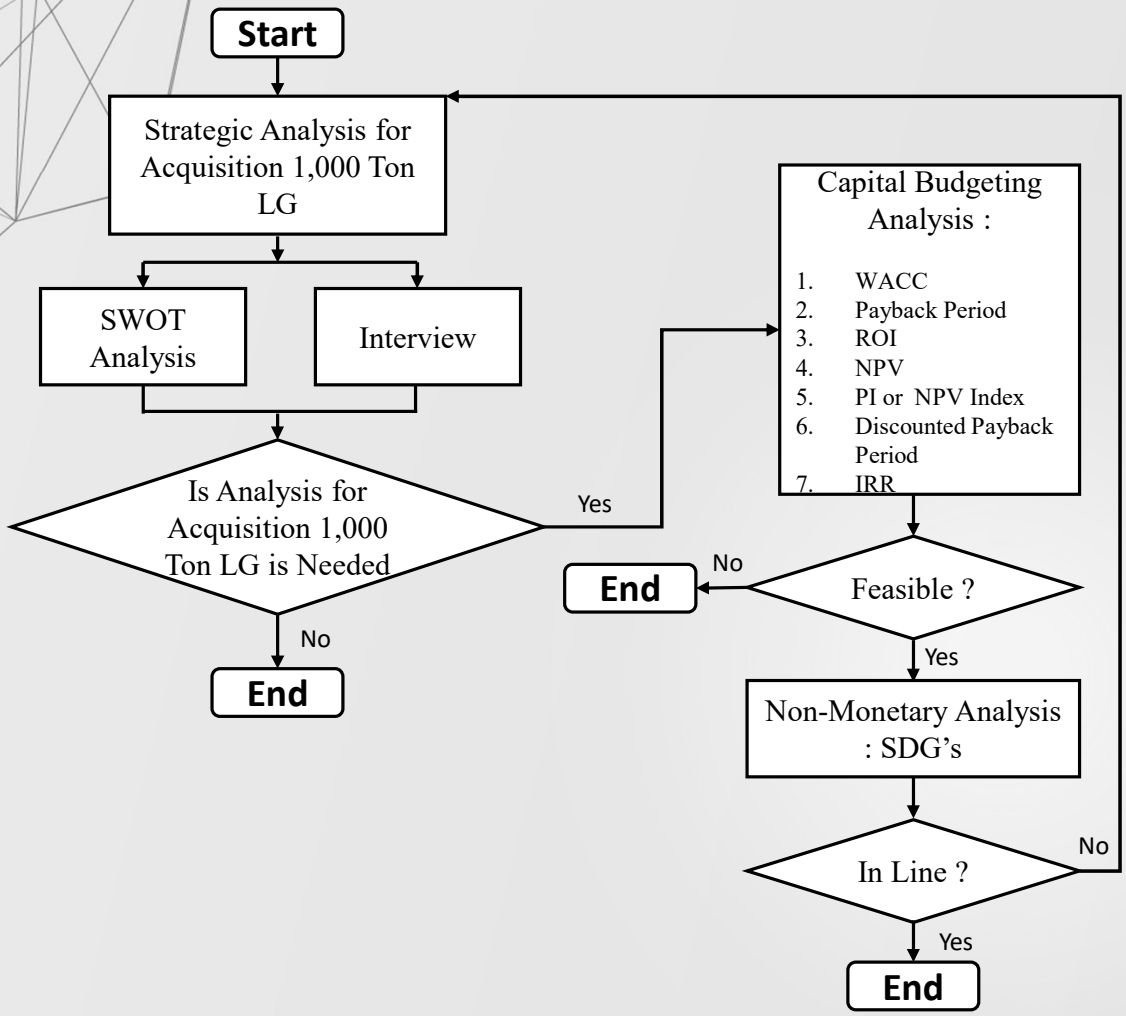
The initial phase of data collection aims to gather insights from management perspectives.

Research Design
Stage-2

In this research, author performed the calculation **based on the data and information from Company to calculated**

1. Weighted Average Cost of Capital (WACC)
2. Payback Period
3. Return on Investment (ROI)
4. Net Present Value (NPV)
5. NPV Index = Profitability Index
6. Discounted Payback Period
7. Internal Rate of Return (IRR)

Conceptual Frame Work Design



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FINDING, ANALYSIS, AND DISCUSSION

SWOT Analysis

INTERNAL	
STRENGTHS	**WEAKNESS**
- **Faster installation** of Precast Box Girders - Enhanced **safety** and reduced **accident risks** - Long-term **durability** and **reusable** for future projects - Ensures high construction **precision** and **quality**	- High initial **investment cost** - Regular **maintenance** and **operational** expenses - **Limited usage** for smaller projects

SWOT Analysis

EXTERNAL	
OPPORTUNITIES	**THREATS**
- **Competitive edge** in securing large-scale projects - **Cost savings** in long-term project execution - Enhances **the company's reputation** in the industry - Supports **national infrastructure development** initiatives	- **Economic fluctuations** affecting material costs - **Operational risks** such as machinery failure - **Regulatory** changes impacting construction policies

SWOT Analysis

Key Findings

1 The investment is crucial for efficient project completion.

2 Strategic planning and risk mitigation are necessary.

3 Aligning with national infrastructure goals enhances feasibility.

Capital Budgeting Analysis Overview

To assess the financial feasibility of the Launcher Gantry investment, several capital budgeting methods were applied:

- Weighted Average Cost of Capital (WACC)
- Payback Period
- Return on Investment (ROI)
- Net Present Value (NPV)
- Profitability Index (PI)
- Discounted Payback Period (DPP)
- Internal Rate of Return (IRR)

Capital Budgeting Analysis Assumptions

Key financial assumptions in the investment analysis:

- **Price of Launcher Gantry : IDR 35.48 billion**
- **Engineering Service Fee : IDR 4.36 billion**
- **Inst. & Comm. Cost : IDR 7.72 billion**
- **Economic Life : 10 years**
- **Corporate Tax : 22%**
- **Interest Rate before Tax : 12%**
- **WACC : 9.36%**

Capital Budgeting Analysis Assumptions

Revenue :

- Monthly production of 4 spans, 12 months of operation per year, the total spans installed annually amount to 48 spans.
- The revenue per span is derived from the contracted agreement between PT Wijaya Karya and the respective project stakeholders.
- Received in cash basis.

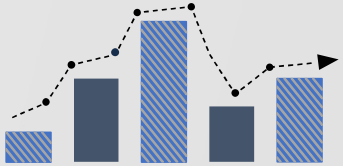
OPEX

- Cash OPEX and non-cash OPEX are considered in the financial analysis.

Depreciation

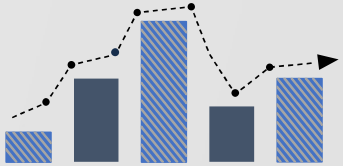
- Calculated using the straight-line method.
- The straight-line method assumes an economic life of 10 years.

Capital Budgeting Analysis
Key Results



Item	Results	Description
WACC	9.36%	• Since this investment is fully funded by debt, the tax savings help improve financial efficiency.
Payback Period	3.8 years	• Relatively quick recovery of the initial capital. This payback period is much shorter than similar projects, making cash flow better.
ROI	60.17%	• Strong profitability compared to the initial investment. • A high ROI suggests financial viability, making the investment a beneficial strategic decision.
NPV	IDR 48.3 billion	• A positive NPV indicates that the project's future cash inflows exceed the initial investment. • This confirms the financial feasibility and profitability of acquiring the Launcher Gantry.

Capital Budgeting Analysis
Key Results



Item	Results	Description
PI	**1.02**	• A PI greater than 1.0 suggests the project generates more value than its cost. • This reaffirms that the investment will not only recover costs but also produce significant returns.
Discounted Payback Period	**4.7 years**	A DPP of less than 5 years is considered reasonable for infrastructure investment projects.
IRR	**26.59%**	This far exceeds the WACC of 9.36%, confirming strong financial returns. • The IRR validates the project's ability to generate surplus value for the company.

Non-Monetary Analysis
Key Results

SDG 9 – Industry, Innovation, and Infrastructure

- Supports **SDG 9** by strengthening infrastructure and innovation.
- Advanced gantry technology improves construction efficiency.
- Automation boosts speed, quality, and sustainability.
- Enhances regional infrastructure resilience.

SDG 11 – Sustainable Cities and Communities

- Ensures high-quality, resilient toll road construction.
- Supports sustainable urban mobility in North Jakarta.
- Enhances transportation safety and efficiency.
- Strengthens adaptable and durable infrastructure.

SDG 13 – Climate Action

- Reduces environmental impact and emissions.
- Speeds up construction, cutting energy use.
- Lowers dependence on energy-intensive processes.
- Supports sustainable infrastructure and climate action.

SDG 8 – Decent Work and Economic Growth

- Improves worker safety and reduces manual labor.
- Automation ensures a safer, more efficient workplace.
- Boosts cost efficiency, speeds up projects, and supports economic growth.
- Creates jobs in planning, logistics, assembly, and maintenance.

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CONCLUSION AND RECOMMENDATION

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CONCLUSIONS

✅ Strategic Benefits (SWOT Analysis)

- Improves **efficiency** and reduces delays.
- Enhances **competitive advantage** with cost-effective solutions.

Overall, SWOT analysis indicates that the benefits outweigh the risks, making this a strategic investment for WIKA.

✅ Financial Feasibility (Capital Budgeting Analysis)

- **Positive NPV, IRR, and Payback Period** confirm profitability.
- Cuts long-term costs by reducing rental dependency.

Collectively, these metrics support the financial attractiveness of the investment.

✅ Sustainability & SDG Contribution

- Supports **SDG 9** (Infrastructure & Innovation).
- Enhances **worker safety** and reduces environmental impact.

The investment not only provides financial returns but also aligns with global sustainability efforts.

Theoretical Implication	Managerial Implication
❑ Validates the importance of capital budgeting tools (WACC, NPV, IRR, Payback Period, etc.). ❑ Strengthens the link between financial analysis and strategic decision-making. ❑ Demonstrates how investment decisions in infrastructure can be evaluated holistically. ❑ Enhances understanding of operational and financial synergies in capital-intensive projects.	❑ Provides decision-makers at WIKA with a structured investment evaluation framework. ❑ Emphasizes the role of financial and operational analyses in project feasibility. ❑ Supports investment in advanced equipment to enhance market competitiveness. ❑ Encourages companies to align infrastructure investments with sustainability objectives.

Limitations of the Study

- Focuses on financial and strategic aspects, with minimal macroeconomic analysis.
- Limited assessment of labor adaptation and reskilling.
- Findings are specific to WIKA and may not apply to other industries.
- Sustainability aspects covered, but not full environmental compliance analysis.

Recommendations for Future Study

- Expand risk analysis to cover regulatory and operational risks.
- Assess emerging technologies in infrastructure investment.
- Compare similar investments across different markets.
- Examine social and environmental impacts beyond SDG alignment.
- Develop sustainability frameworks for capital investment decisions.

Final Thoughts

- The acquisition of the 1,000 Ton Launcher Gantry is a strategically sound decision.
- The financial benefits, operational improvements, and alignment with sustainability goals justify the investment.
- This study provides valuable insights for infrastructure firms seeking to optimize capital investments.
- Future research can enhance understanding of investment risks, technological advancements, and broader industry implications.

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