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Corporate Valuation of Indonesian Drone Service Company: Case Study of PT Kelana Geospasial

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Abstract
Indonesia's drone industry is expanding rapidly, fueled by significant investments and the growing necessity of drone technology in agriculture, offshore mining, and aerial photography. The global and Asian drone markets are also on the rise, with a projected 7.1% CAGR increase driven by industrial use and substantial investments. However, valuing Indonesian drone businesses is difficult due to their intangible assets and the startup nature of many companies, which focus more on value creation than financial stability. Established in 2016, PT Kelana Geospatial (PT KG) utilizes Unmanned Aerial Vehicle (UAV) technology for aerial mapping services and collaborates with sectors like agriculture, offshore mining, and aerial photography. They also offer UAV pilot certification and sell related products and parts. Despite their diverse offerings, PT KG faces stagnant growth and needs to enhance productivity with existing resources. The management struggles with valuing potential mergers, maintaining clear financial records, and addressing industry risks. PT KG's growth is mainly driven by mapping and maintenance services, although product sales have declined. Despite an improving financial situation, high production costs and expenses challenge profitability. While positive GPM and OPM indicate potential, NPM remains negative. Recommendations include expanding services, boosting efficiency, and leveraging technology and partnerships. By utilizing These strategies could foster sustainable growth and increase PT KG's enterprise value, currently estimated at IDR 3.84 billion.

Keywords: business valuation, drone service business, financial health, sustainable growth, unmanned aerial vehicle.

1. Introduction

In this section, the research background and objective are presented. This brief explain the reason and context of studies.

1.1. Background

The problem of maintaining operations and achieving profitability is critical for ICT-based startups, including the rapidly growing drone industry, which faces unique valuation challenges

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due to significant intangible assets (Qosasi et al., 2019). Previous work has emphasized organizational agility and entrepreneurship as key to exploiting competitive advantages in ICT, yet traditional value investing theories still focus on tangible assets despite the economic benefits of intangible assets(Sicoli, 2018). This study builds on these concepts by examining the drone sector, which benefits diverse industries and is seen as an emerging market with high growth potential (Edulakanti & Ganguly, 2023). PT Kelana Geospasial (PT KG), established in 2016, exemplifies these challenges as it offers UAV technology for aerial mapping, agriculture, offshore mining, and aerial photography. PT KG provides UAV pilot certification and sells related products but faces stagnant growth and must maximize productivity. Direct investment in the ICT sector positively correlates with economic growth (Latif et al., 2018), but PT KG's management is concerned about business valuation for mergers and acquisitions. Financial theories suggest using discounted cash flow, relative valuation, and real option valuation, each considering factors like sales, expenses, and investments(Kumar, 2016). For emerging markets like the drone industry, risks such as high inflation and macroeconomic instability must be considered in valuations (Bruner et al., 2002). This study aims to explore PT KG's growth drivers and valuation methods, proposing that expanding services, boosting efficiency, and leveraging partnerships can enhance sustainable growth and increase enterprise value.

1.2. Understanding Drone-Service Business Industry

The drone-service business industry is an emerging and rapidly evolving sector with substantial implications for various applications, including agriculture, construction, and infrastructure. In Indonesia and the broader Asia-Pacific region, venture capital (VC) investments in IT hardware and the Internet of Things (IoT) sectors have shifted towards financial efficiency and profitability, with a significant focus on early-stage companies and deals under $50 million (Bain & Company & AC Ventures, 2023). The increasing adoption of digital technologies has driven Indonesia's digital economy, with IoT contributing significantly to GDP and impacting industries like retail and tourism(Widagdo & Rofik, 2019). The Southeast Asian Industrial IoT market is projected to reach $6.87 billion by 2030, growing at an annual rate of 19.1%, reflecting a strong interest in IoT and hardware investments(KPMG Private Enterprise, 2024). Major players in the Asian drone market, including DJI, EHang, Hubsan, and Yuneec, have established a significant presence, with local Indonesian companies like TerraDrone Indonesia and PT Dirgantara Indonesia also contributing to the ecosystem.

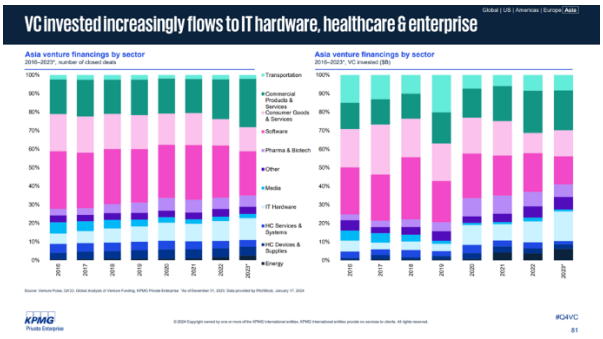

Figure 1. Financing Amount of Asia's VC by Industry Sector
(Source: KPMG Private Enterprise, 2024)

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However, a significant funding gap remains for climate-tech startups, particularly in the hardware sector, highlighting a critical challenge in scaling up essential clean energy technologies(KPMG Private Enterprise, 2024). This gap underscores the need for targeted research to address the mismatch between available funding and project needs. The drone industry in Indonesia is poised for growth, driven by the demand for aerial data collection and analysis, and supported by a comprehensive ecosystem consisting of technology developers, standardization regulators, manufacturers, drone users, and the public(Pratama Hadi & Lantu, 2023). This study aims to explore the unique challenges and opportunities within the drone-service business industry, focusing on financial efficiency, profitability, and the need for targeted funding strategies to support sustainable growth and technological advancement.

1.3. Relevant Scholarship

In this section, the recent studies of similar business valuation are presented to support the studies.

1.3.1. Valuation Challenges In High-Growth Indutries

High-growth industries, such as the drone industry, present unique valuation challenges due to their rapid expansion, innovative products, strong competitive advantage, and adaptability to market conditions(Coad et al., 2014). With a forecasted CAGR of 7.7% for the commercial sector and 20.02% for the global market, these industries attract higher valuations due to potential future earnings. The competitive edge provided by innovative products, like drone-based delivery services potentially serving up to 7% of EU citizens, further drives valuations (Aurambout et al., 2019). However, high growth also entails elevated risks, stringent regulations, and intense competition, complicating valuation processes(Degryse et al., 2012). Common pitfalls include miscalculating financial metrics and the lack of a clear operating history, especially for early-stage companies (Boer, 1998; Jones, 2018).

1.3.2. Industry-Specific Valuation Factor For Drone Companies

Technological advancements drive asset valuations and investor expectations, with drones transforming business models by offering new efficiencies and growth opportunities (Beninger & Robson, 2020; Garleanu et al., 2009). In sectors like agriculture, drones enhance productivity through precision farming, contributing to sustainability alongside technologies like nanotechnology (World Economic Forum & Accenture, 2018). Market interest in these technologies accelerates R&D, improving drone performance and expanding applications, thereby positively impacting valuations. Regulatory environments also play a crucial role, as seen in Indonesia's adoption of comprehensive drone regulations, including licensing and operational permits, which influence industry stability and growth (Pratama Hadi & Lantu, 2023). Despite regulatory challenges, supportive initiatives in regions like Southeast Asia are fostering drone adoption and industry expansion, driven by diverse customer segments and rapid technological integration. This continuous advancement underscores the critical link between technological growth, regulatory frameworks, and asset valuation, making it imperative to address these factors in drone industry valuations.

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1.3.3. Comparative Analysis Of Valuation Method

A comparative analysis of valuation methods highlights three primary approaches: market, asset, and income. The market approach values companies by comparing them to similar firms using indicators like price-to-sales and earnings, reflecting assessments of growth and risk (Bernström, 2014). The asset approach adjusts balance sheets to market values and often aligns with the Discounted Cash Flow (DCF) method, which captures intangible assets and synergies. For instance, PT KG's business model of manufacturing, suggests valuation methodologies similar to other manufacturers. Studies, such as Yu's 2023 valuation of Midea Group, reveal challenges in projecting future cash flows due to inflation and investment rate adjustments, employing DCF by calculating Net Operating Profits Less Adjusted Taxes (NOPLAT) (Yu, 2023). Similarly, Han's 2023 research on a retail company uses DCF to measure the impact of the internet economy, applying the Capital Asset Pricing Model (CAPM) and assessing enterprise value through Net Present Value (NPV), indicating potential undervaluation compared to stock prices (Han, 2023). These continuous advancements underscore the necessity for precise valuation methods, addressing both tangible and intangible factors in high-growth industries.

1.4. Research Question and Objectives

To investigate the financial performance and valuation challenges of PT Kelana Geospasial (PT KG), a comprehensive study will be conducted focusing on the optimization of production costs and expense management. The central hypothesis posits that effective management of these financial aspects can significantly enhance PT KG’s performance and valuation. The research will address key areas by first analyzing PT KG's historical financial data to identify performance trends, strengths, and weaknesses. It will also pinpoint the main challenges faced by PT KG in cost optimization and expense management, considering the unique characteristics of high-growth industries such as rapid expansion, innovation, and adaptability. Additionally, various valuation methods—market, asset, and income approaches—will be evaluated to determine the most accurate reflection of PT KG's financial health and potential. The study will culminate in proposing actionable strategies for PT KG to streamline costs and expenses, aiming to validate the hypothesis that these measures will improve financial performance and valuation. While this approach is robust, potential weaknesses include the reliance on historical data, which may not fully account for future market dynamics, and the assumption that financial optimization alone can drive significant performance improvements without considering external factors such as market competition and regulatory changes.

2. Research Methodology

2.1. Research Design

To value a company using the free cash flow (FCF) approach, the income statement and balance sheet from multiple years are used to calculate the Discounted Cash Flow (DCF) model, resulting in unlevered FCF. This unlevered FCF is then used to calculate the present value of FCF and the terminal value. Market data uses to influence valuation, while the future valuation scenarios uses to elaborate the valuation model.

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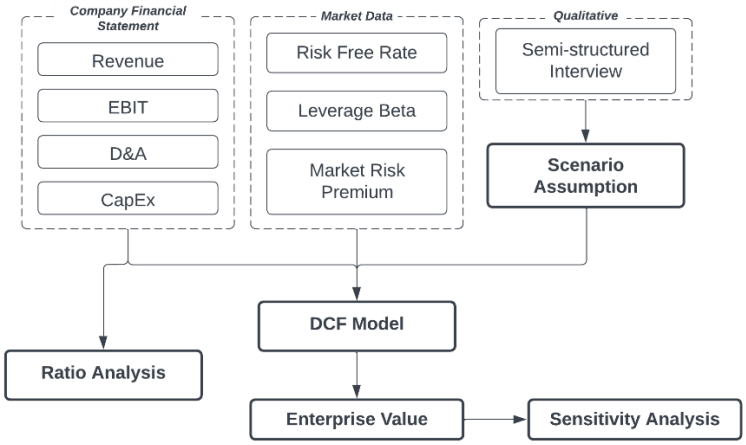

Figure 2. Conceptual Framework

2.2. Data Analysis Method

Due to management's uncertainty in forming a strategic plan for the future, this study aims to address the research objectives through a comprehensive analysis. The study utilizes both primary and secondary data to ensure a well-rounded assessment of corporate valuation for PT KG.

Primary data will be collected through semi-structured interviews with four top management respondents from PT KG and key players in the drone industry. These interviews will explore business practices, operational challenges, and future industry insights. The data will be analyzed using open coding to identify patterns and themes critical for defining PT KG's valuation scenarios.

Secondary data will be sourced from PT KG’s financial reports and publicly available information. This data will be subjected to ratio analysis to assess the company's profitability and financial health. The findings from this quantitative analysis will then be used as the foundation for a Discounted Cash Flow (DCF) valuation, projecting future cash flows.

To ensure robustness, the DCF valuation will undergo sensitivity analysis across baseline, optimistic, and pessimistic scenarios, focusing on key variables such as sales, cost of goods sold (COGS), and salary expenses. This method ensures a thorough evaluation of PT KG’s financial performance and its strategic shift towards drone services, providing a comprehensive and informed corporate valuation.

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Figure 3. Data Collection Method

2.3. Research Scope and Limitations

This study aims to identify financial growth opportunities for PT KG using business valuation methodologies and financial performance metrics.

a. Industry Representation: Since the research focuses on a single company's case study, it doesn't represent the entire drone service industry. Future research should include multiple companies for comparative studies to provide a broader perspective.
b. Holistic Performance Evaluation: While this case study centers on financial performance, future company growth could be influenced by various factors. Future studies should incorporate qualitative measures like customer satisfaction, employee engagement, and innovation metrics for a more comprehensive view of company performance.

3. Results

3.1. Interview Analysis

Insights from respondents reveal both similarities and differences in navigating the drone industry's challenges. Key themes include the shift from product sales to service revenue, which provides more stability due to high R&D costs associated with new technologies. While one respondent highlights the importance of service sales for stability, another notes the shift from manufacturing to service contracts during COVID-19. Differences arise in operational efficiency strategies, with some focusing on financial metrics like GPM and NPM, while others emphasize employee training and dynamic team management. Technological innovation and strategic pivoting, such as adopting new tech and securing long-term contracts, are common strategies for maintaining growth and stability. Future expectations include a shift towards data analytics and localizing technology, with the need for supportive regulations and overcoming regulatory and financial hurdles. Overall, adaptability, technological advancement, and strategic financial management are crucial for success in the evolving drone industry.

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Table 1. Axial and Selective Coding

Selective Codes	*Axial Codes*
Business Turbulence towards Company Financial Performance and Growth	- Financial Management - Market Dynamics
Operational Efficiency and Challenges	- Enhanced Operational Efficiency - Resource Optimization - Flexibility and Adaptability - Risk Mitigation
Business Practices and Strategic Initiatives	- Customer-centric Approach - Leadership and Decision-Making - Innovation and Market Alignment - Stakeholder Engagement
Future Industry Expectations	- Technological Advancements - Regulatory Challenges and Industry Growth

3.2. Ratio Analysis

PT KG has shifted its revenue focus from product sales to services such as mapping and maintenance, which has proven more stable. Although product sales peaked at IDR 952 million in 2021 and then declined, mapping services rose to IDR 865 million by 2023, reflecting a strategic move towards reliable service income. The company's current ratio, although historically low, is showing signs of improvement, indicating better financial health.

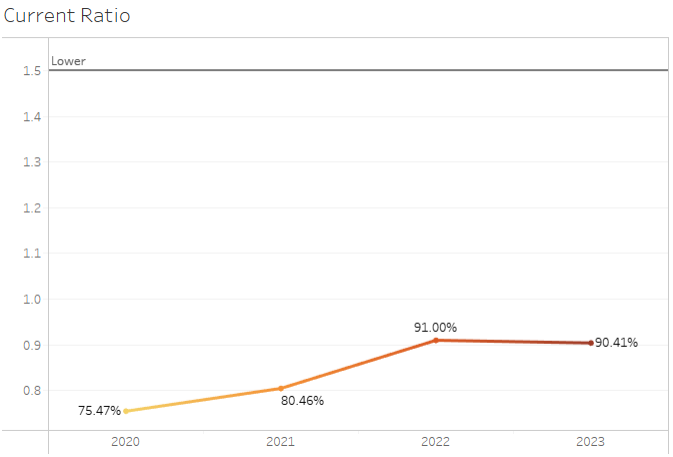

Figure 4. Current Ratio of PT KG from 2020-2023

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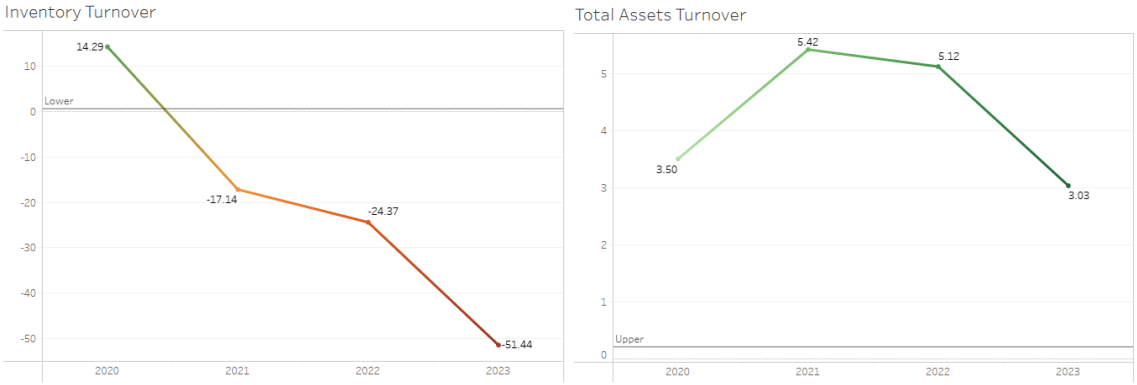

Figure 5. Activity Ratio of PT KG from 2020-2023

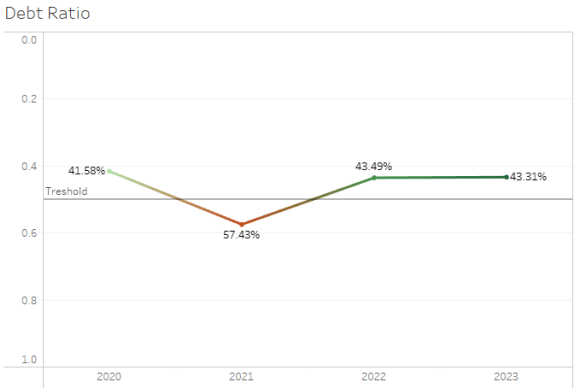

Figure 6. Debt Ratio of PT KG from 2020-2023

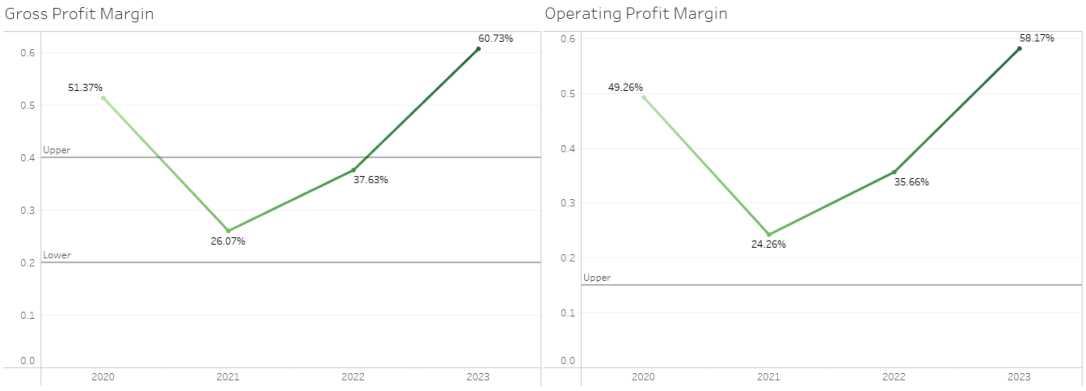

Figure 7. GPM, OPM of PT KG from 2020-2023

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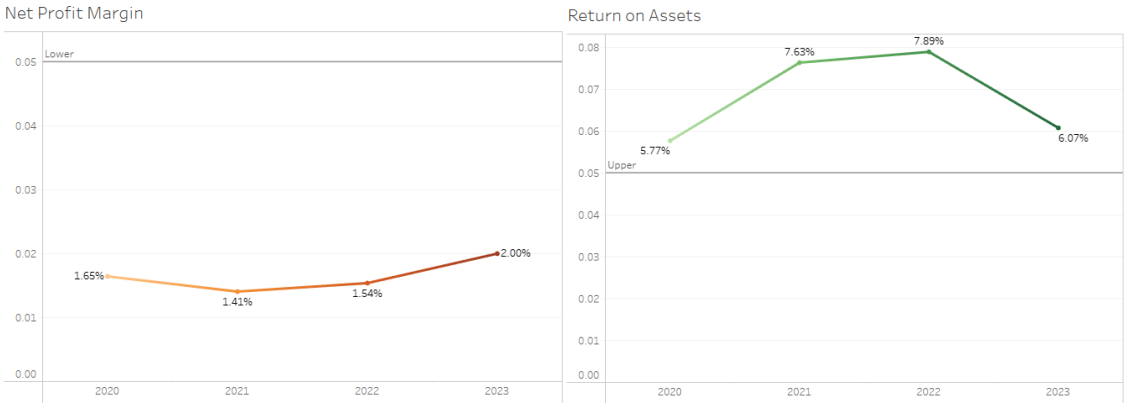

Figure 8. NPM and RoA of PT KG from 2020-2023

The inventory ratio has been declining over the past four years, signaling challenges in productivity due to higher cost of goods sold (COGS). Despite this, asset turnover remains healthy, showing effective asset use. The debt ratio, which spiked to 57.43% in 2021, has been manageable at below 50% in other years. Profitability ratios present a mixed view: while Gross Profit Margin (GPM) and Operating Profit Margin (OPM) are positive, Net Profit Margin (NPM) is negative, suggesting limited revenue after expenses. Return on Assets (RoA) is above 5%, indicating efficient asset utilization and a positive outlook for investments.

3.3. Company Valuation

In this chapter, the Discounted Cash Flow (DCF) valuation method is applied to determine the future valuation of PT KG, utilizing financial data and projections. The process involves estimating future cash flows based on historical performance and strategic insights, including a shift towards more drone services, leading to higher capital expenditure. Unlevered free cash flow is calculated by adding Depreciation and Amortization (D&A) to Earnings Before Interest After Tax (EBIAT), then subtracting Capital Expenditure (CaPex) and changes in Net Working Capital. The present value is derived by dividing the future cash flows by the Weighted Average Cost of Capital (WACC) and adjusting for the number of future years(CFA Institute, 2023).

Table 2. Terminal Value Sensitivity

		WACC				
		6.54%	**7.04%**	**7.54%**	**8.04%**	**8.54%**
TGR	**1%**	3,946,411,225	3,619,721,554	3,342,984,432	3,105,556,560	2,899,617,796
	2%	4,863,344,648	4,380,869,981	3,985,484,603	3,655,560,381	3,376,083,288
	3%	6,298,319,553	5,518,824,559	4,911,024,498	4,423,819,686	4,024,557,982
	4%	8,863,195,959	7,405,433,466	6,359,468,287	5,572,405,380	4,958,704,347
	5%	14,759,080,683	11,141,658,947	8,948,418,997	7,476,639,557	6,420,617,020

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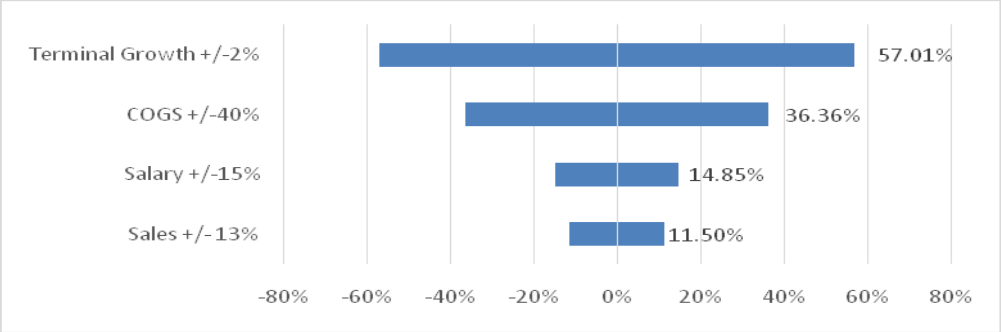

Figure 9. Impact on Terminal Value by Change in Assumptions

The growth rate for PT KG is assessed using a multi-stage model: expansion, decelerated, and mature stages, with terminal growth rates aligned with historical GDP growth rates, estimated at around 3% due to past economic conditions(CFA Institute, 2023). The risk-free rate, based on the yield of 10-year Indonesian government bonds, helps set a realistic discount rate. Beta, essential for calculating the cost of equity, is adjusted from the unleveraged beta of comparable public companies in the drone or tech sector to reflect PT KG's specific risks.

4. Discussion

PT KG primarily generates revenue from services such as mapping and maintenance rather than product sales. In 2021, the company's revenue peaked at IDR 952 million but declined in the following year. By 2023, revenue from mapping services had risen to IDR 865 million, reflecting a strategic shift towards more stable service-based income. The current ratio has improved, signaling better financial health, though the inventory ratio has declined over four years due to higher costs of goods sold (COGS), indicating productivity challenges. Despite a peak debt ratio of 57.43% in 2021, which is concerning, it remains below 50% in other years. Profitability ratios present a mixed picture: while Gross and Operating Profit Margins (GPM and OPM) are positive, Net Profit Margin (NPM) is negative, though Return on Assets (RoA) above 5% suggests efficient asset use.

Interviews with PT KG's management and key players emphasize the importance of flexibility, operational efficiency, and a strategic focus on services for stable financial performance. Future industry trends highlight the increasing role of data analytics, technological innovation, and regulatory support. The company's shift towards drone services aligns with these trends, promising higher revenue and simplified operations. Valuation through the Discounted Cash Flow (DCF) model estimates an enterprise value of IDR 3.84 billion, showing significant growth potential if sales rise and costs are managed effectively. Overall, PT KG's focus on services and improved financial ratios position it well for future growth, despite ongoing challenges.

5. Conclusion

Over the past four years, PT KG has shifted its focus from product sales to service-based revenue streams, notably mapping and maintenance, leading to increased service revenue and declining product sales. Despite historical challenges with its current ratio, the company has shown financial improvement. While Gross Profit Margin (GPM) and Operating Profit Margin (OPM)

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are positive, indicating the ability to cover operating expenses, the Net Profit Margin (NPM) remains negative, highlighting issues in generating net revenue. PT KG also faces challenges with production costs and expense management, as evidenced by declining inventory ratios and increasing Cost of Goods Sold (COGS). The high debt ratio in 2021 further underscores concerns about long-term financial stability, constraining growth prospects and profitability.

To address these challenges and capitalize on market opportunities, PT KG should continue expanding its service-based revenue streams and focus on improving operational efficiency through strategic planning and technological innovation. Enhanced cost management, particularly in production and inventory, is crucial for profitability. Managers should prioritize service offerings, implement stringent cost control measures, and build strategic partnerships while ensuring regulatory compliance. Investing in new technologies, marketing efforts, and employee development will strengthen PT KG's market position and foster sustainable growth. By focusing on these areas, the company can navigate current challenges, capitalize on emerging opportunities, and enhance its future valuation.

List of Abbreviations

Abbreviation	*Full Term*
CAGR	**Compound Annual Growth Rate**
CaPex	**Capital Expenditure**
COGS	**Cost of Goods Sold**
D&A	**Depreciation and Amortization**
DCF	**Discounted Cash Flow**
EBIAT	**Earnings Before Interest After Tax**
GDP	**Gross Domestic Product**
GPM	**Gross Profit Margin**
ICT	**Information and Communication Technology**
IDR	**Indonesian Rupiah**
IoT	**Internet of Things**
NOPLAT	**Net Operating Profits Less Adjusted Taxes**
NPM	**Net Profit Margin**
NPV	**Net Present Value**
OPM	**Operating Profit Margin**
PT	***Perseroan Terbatas*** **(Indonesian terms for Limited Liability Company, or LLC)**
PT KG	**PT Kelana Geospasial**
R&D	**Research and Development**
RoA	**Return on Assets**
UAV	**Unmanned Aerial Vehicle**
VC	**Venture Capital**
WACC	**Weighted Average Cost of Capital**

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