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Strategic Expansion in the Construction Business: A Financial Feasibility Study of a New Fabrication Workshop

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Abstract

This study evaluates the financial feasibility of establishing a steel fabrication workshop for ZAN Construction, a design-and-build contractor in Bandung, and compares two candidate locations: Bekasi City and West Bandung Regency. The research addressed the firm's dependence on third-party fabrication, which previously caused an estimated opportunity loss of IDR 793 million in a single bridge project. Using a single embedded case design, the study combines quantitative capital budgeting with qualitative strategic analysis. The quantitative model projects a ten-year investment for a workshop with an annual capacity of 1,200 tons, financed equally by debt and equity. The discount rate is calculated through CAPM and adjusted using the firm's capital structure, producing a Weighted Average Cost of Capital of approximately 11.5%. Financial feasibility is assessed using Net Present Value, Internal Rate of Return, Profitability Index, and Payback Period.The results show that both locations are financially feasible. Bekasi City generates an NPV of approximately IDR 30.1 billion, an IRR of 25.9%, a PI of 2.04, and a discounted payback period of 5.8 years. West Bandung Regency performs better, with an NPV of IDR 33.6 billion, an IRR of 31.8%, a PI of 2.52, and a discounted payback period of 4.7 years. The stronger performance of West Bandung Regency is mainly driven by lower land and labor costs, while both locations use the same revenue and utilization assumptions. Sensitivity analysis identifies raw steel price as the most critical variable, followed by production volume and labor cost.

INTRODUCTION

Indonesia represents the largest economy in Southeast Asia, with a Gross Domestic Product (GDP) reaching IDR 22,139 trillion and a GDP per capita of IDR 78.6 million, equivalent to USD 4,960.3 (Badan Pusat Statistik, 2025). Despite a difficult global climate and unexpected challenges, Indonesia's economy remains robust (Acharya, 2014; Anas et al., 2022; Garnaut, 2015; Lewis, 2009; Wurarah, 2024). Backed by effective fiscal and monetary policies, economic growth is projected to hold steady at 5.0% in 2025 and 5.1% in 2026 (International Monetary Fund, 2026). A primary driver of this economic growth is the infrastructure and construction sector, which contributes 9.82% to the GDP, thereby solidifying its position as a key pillar of the national economy (Badan Pusat Statistik, 2025). In 2024, the Indonesian government allocated USD 27.6 billion for infrastructure within the state budget, marking a 5.8% increase from the preceding year and representing the highest infrastructural expenditure

over the past five years (NextMSC Indonesia Construction Market Report, 2025). This infrastructural development trajectory is sustained into 2025, with the government allocating USD 26.6 billion to support the construction of the new National Capital (IKN) Nusantara in Kalimantan, the Trans-Sumatra toll road, and the expansion of ports, railways, and other transportation systems. The construction processes for these massive projects necessitate a substantial volume of building materials, notably steel (Allen & Iano, 2019; Chan et al., 2018; Kanyilmaz et al., 2023; Liew et al., 2019; Mehra et al., 2021; Sbahieh et al., 2023).

The strong demand for steel is evident in the IKN Nusantara project, which is estimated to require between 500,000 and 700,000 metric tons in its initial phase, with projections indicating up to 1,000,000 metric tons in subsequent phases (Shanghai Metal Market, 2025). Furthermore, the government has enacted the 2024-2029 National Medium-Term Development Plan (RPJMN), targeting an annual infrastructure investment equivalent to 5% of the GDP. This plan encompasses over 200 National Strategic Projects (PSN), with an estimated value of IDR 6.4 trillion (Business Indonesia, 2025). These governmental initiatives have engendered a sustainable and predictable demand for steel products, thereby driving downstream industrialization, specifically the transformation of raw steel into structural components for construction.

Currently, approximately 76% to 78% of Indonesia’s steel demand is attributed to the construction sector, particularly for infrastructure development and buildings. The Indonesia Iron and Steel Industry Association (IISIA) projects that construction will remain the primary driver of steel demand in Indonesia, supported by the government's economic growth objectives and ongoing large-scale infrastructure projects, such as the development of the new capital in Kalimantan (Lawrence Berkeley National Laboratory, 2024). This high concentration of steel consumption within the construction industry underscores the critical importance of steel fabrication workshops. These facilities are essential for manufacturing vital structural components, including beams, columns, roof trusses, girders, and steel frames, that form the structural frameworks of buildings, bridges, warehouses, and other industrial facilities.

However, a research gap remains in the application of integrated financial feasibility analysis specifically for steel fabrication workshops in the Indonesian context. Most existing studies have focused on large-scale infrastructure projects or real estate development, with limited attention to downstream fabrication facilities that serve these projects. Furthermore, the integration of capital budgeting analysis with strategic frameworks such as Porter's Five Forces and SWOT in a single fabrication workshop feasibility study has not been extensively explored. This research addresses this gap by combining quantitative financial modeling with qualitative strategic analysis for a steel fabrication workshop investment decision.

The novelty of this research lies in its comprehensive, integrated approach to feasibility analysis for a steel fabrication workshop. The study combines rigorous capital budgeting analysis with sensitivity testing and strategic business analysis, providing a holistic evaluation framework that extends beyond simple financial metrics. Additionally, the comparison of two candidate locations Bekasi City and West Bandung Regency offers practical insights for location selection in fabrication facility investments. The research also contributes to the literature by documenting the financial impact of internal fabrication capability on contractor competitiveness through the quantification of opportunity losses from third-party dependency.

The convergence of these macroeconomic indicators and industry-specific dynamics,

such as relatively stable GDP growth, significant state budgetary allocations for infrastructure, the development of the IKN Nusantara mega project, and various National Strategic Projects, creates a robust environment for the construction sector. Because this sector accounts for a massive 78% of the national steel consumption rate, these factors collectively position to establish the steel fabrication workshop as a highly prospective and strategic business venture. Despite a strong market outlook, the high costs of launching a steel fabrication workshop require more than just industry optimism. To protect the investment and ensure funds are deployed efficiently, a thorough financial feasibility analysis must precede project execution. This rigorous assessment must evaluate critical capital budgeting indicators, specifically Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), and Payback Period (PBP), while also conducting a sensitivity analysis to stress-test the financial model against potential market fluctuations. Consequently, the primary objective of this thesis is to establish a financial feasibility analysis to ascertain the viability, sustainability, investment attractiveness, and associated risks of the proposed project.

METHOD

This study employed quantitative and qualitative research methodologies to determine the viability and the most advantageous location for the steel fabrication workshop project, and provides a structured diagnosis of the organization's strategic position, bridging environmental scanning and strategy formulation. Creswell and Creswell (2018) define mixed-methods research as an approach in which the researcher collects and analyzes both quantitative and qualitative data, integrates the two forms of data, and uses distinct designs that may involve philosophical assumptions and theoretical frameworks.

Research Design

This research comprises five chapters to provide a robust, systematic approach, ensuring the study progresses logically toward a final, defensible recommendation regarding ZAN Construction’s strategic need. The first chapter discusses the macroeconomic conditions and the strategic situation of industrial construction in Indonesia, which requires a very large supply of steel fabrication materials, as the background of this research. It continues with the profile of the ZAN Construction Company, which has begun working on infrastructure projects, especially the construction of steel bridges. They recognized an opportunity to optimize a larger project by taking on a full-set project, including supply, fabrication, delivery, and erection, facilitated by a steel fabrication workshop. From the business issues that arose, research questions, research objectives, and the scope and limitations of this study were developed.

Data Collection Method

This section outlines the types of data collected, their respective sources, and the methodologies employed for data gathering. The data collection strategy supplies all necessary inputs for the qualitative strategic analysis and the quantitative financial model. This study employs both primary and secondary data sources. According to Sekaran and Bougie (2016), primary data refers to information collected directly by the researcher for the specific objectives of the study, whereas secondary data consists of information obtained from existing sources that were initially gathered for different purposes.

RESULTS AND DISCUSSION

In this chapter, a financial feasibility analysis of the steel structure fabrication workshop project will be presented, including the parameters of Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Payback Period (PBP), and sensitivity analysis to provide observations on the most dominant financial variables in this project. Then, it will be continued with a strategic business analysis in the steel fabrication industry using Porter's Five Forces method to determine the level of competitiveness and attractiveness in this industry, and the SWOT-TOWS method to observe the internal and external conditions of the company and the strategic steps that will be taken towards the internal and external evaluations.

Financial Feasibility Study

This sub-chapter details the project cash flow modeling to assess the financial feasibility of a steel structure fabrication project. The analysis begins by establishing key financial assumptions, including capital expenditures (CAPEX), workshop operating expenses (OPEX), and projected revenue from work contracts, as essential foundations for conducting a capital budgeting evaluation.

Underlying Assumptions

Several assumptions will be utilized to analyze the financial feasibility of this steel fabrication workshop project. These assumptions are derived from company policies, lender policies, government rates, and other data summarized in the following table.

Table 1 Underlying assumptions

Parameter	Value	Source	Verification Date
Project Horizon	10	Management decision	2025
Capital Structure, Equity	50.00%	Management decision	2025
Capital Structure, Debt	50.00%	Management decision (BCA)	2025
Interest Rate Year 1–3 (BCA)	5.00%	BCA loan offer	2026
Interest Rate Year 4–10 (BCA)	12.00%	BCA loan offer	2026
Corporate Income Tax Rate (T)	22.00%	UU HPP No. 7/2021	Effective 2022
Depreciation Method	Straight-line	PMK 96/PMK.03/2009	Indonesian tax reg.
Useful Life, Building	20	PMK 96/PMK.03/2009 Group 2	Indonesian tax reg.
Useful Life, Equipment	8	PMK 96/PMK.03/2009 Group 2	Indonesian tax reg.
UMK Kota Bekasi 2026	5.938.885	Kepgub Jabar No. 561.7/Kep.862-Kesra/2025	Dec 2025
UMK Kab. Bandung Barat 2026	3.984.711	Kepgub Jabar No. 561.7/Kep.862-Kesra/2025	Dec 2025
PLN Tariff I-2/TM (6.6-200 kVA)	1114.74	PLN Tariff Adjustment Q4 2025	Nov 2025
Risk-free Rate (Rf), SBN 10Y	6.58%	Trading Economics	Apr 2026
Mature Market ERP	4.23%	Damodaran	Jan 2026
Indonesia CRP	2.46%	Damodaran Baa2 spread ×1.62%	Jan 2026
Unlevered Beta (βu), Construction	84%	Damodaran industry beta	Jan 2026

Cost of Capital

To calculate the Cost of Capital that will be used to determine the discount rate (r) in the Capital Budgeting analysis, several calculation stages are required, and the variables used are obtained from primary and secondary data. The first stage is to calculate the Relevant Beta (βL), where the beta is used for companies that use debt for their financing, taking into account business risk and financial risk. Table IV.2 below shows the calculation of the Relevant Beta (βL) by referring to the Hamada formula (1972), and data that ZAN Construction will use a 50:50 (D/E) ratio to finance this steel structure fabrication workshop project.

Table 2 Relevered Beta (βL) calculation

Component	Value	Formula	Source
Unlevered Beta (βu)	0.8400	From the Damodaran industry dataset	Damodaran (Jan 2026)
Tax Rate (T)	22.00%	From the Parameters sheet	Tax regulation
D/E Ratio	1.0000	Debt weight / Equity weight	Company confirmation
Relevered Beta (βL)	**1.4952**	βL = βu × [1 + (1-T) × (D/E)]	Hamada (1972)

Table 3 Cost of Equity (Ke) calculation

Component	Value	Formula	Source
Risk-free Rate (Rf)	6.58%	SBN 10Y yield	Trading Economics (Apr 2026)
Equity Risk Premium (ERP)	4.23%	Mature market premium	Damodaran (Jan 2026)
Country Risk Premium (CRP)	2.46%	Baa2 spread × 1.30	Damodaran (Jan 2026)
Relevered Beta (βL)	1.4952	βL = βu × [1 + (1-T) × (D/E)]	Hamada (1972)
Cost of Equity (Ke)	**15.36%**	Ke = Rf + βL × ERP + CRP	Sharpe (1964); Damodaran (2012)

Because ZAN Construction will use bank loans to finance this steel fabrication workshop project, and after going through several internal analyses in the company, the interest rate that will be used for the Cost of Debt calculation is 5.00% for the first to third years, and 12.00% for the fourth to tenth years. With these two different interest rates, different After-tax Kd are generated according to the current period.

Table 4 After-tax Kd calculation

Component	Value	Formula	Source
Pre-tax Kd (Year 1–3)	5.00%	BCA promotional rate	BCA loan offer
Pre-tax Kd (Year 4–10)	12.00%	BCA commercial rate	
After-tax Kd (Year 1–3)	**3.90%**	Kd × (1 - T)	Gitman & Zutter (2015)
After-tax Kd (Year 4–10)	**9.36%**	Kd × (1 - T)	

Table 5 WACC calculation

Component	Value	Formula	Source
Equity Weight (E/V)	50.00%		Company confirmation
Debt Weight (D/V)	50.00%		
WACC (Year 1–3)	**9.63%**	(E/V)×Ke + (D/V)×Kd×(1-T)	Brealey et al. (2020)
WACC (Year 4–10)	**12.36%**	(E/V)×Ke + (D/V)×Kd×(1-T)	

Cost of Goods Sold

There are three components in analyzing the Cost of Goods Sold (COGS) of this steel structure fabrication workshop: direct material, direct labor, and manufacturing overhead. Then, the analysis is divided into two groups, namely COGS analysis in Bekasi City and in West Bandung Regency. Direct material consists of two components, namely raw steel and fabrication consumables, where the price of raw steel uses the assumption of the IWF 300 profile which is a common material used for building or bridge structures of IDR 14,150 per kg with shipping costs in the Bekasi City area of around IDR 500 per kg and West Bandung Regency of IDR 850 per kg so that the total direct material is IDR 14,650 per kg (Bekasi City) and IDR 15,000 per kg (West Bandung Regency). Fabrication consumables consist of several supporting material components for steel structure fabrication with requirements that adjust to the design and level of difficulty of the steel structure to be fabricated. However, to provide the required fabrication consumables, it is assumed that the design and fabrication difficulty is moderate, such as fabricating a steel bridge frame or a three-story building structure, where the value is IDR 2,500 per kg. Using the same analysis, the direct material value in West Bandung Regency is obtained by adjusting for shipping costs of the material and the value of the same fabrication consumables.

Operating Expenditure

This sub-chapter will explain the analysis of operating expenditure (OPEX) that must be budgeted by the company each year, which consists of employee wages, steel material prices, and other supporting components. In the previous sub-chapter on cost of goods sold (COGS), several data points were presented to analyze operating expenditure (OPEX), such as steel material analysis (Table IV.16 and IV.17. Direct Material Analysis) and staffing plans (Table IV.18. Labor Wages Configuration). These two data will then be combined with supporting data components such as basic electricity rates, electricity consumption assumptions, and office expenses. The basic electricity rate used in this steel structure fabrication workshop is the basic electricity rate for category 3 medium voltage industry, with a power above 200 kVA at Rp 1,145 per kWh to accommodate the electricity needs of equipment and machinery. Electricity consumption is divided into two components, namely basic electricity usage and variable electricity usage at full capacity. Basic electricity usage is assumed to be used when the workshop is operating but does not use the equipment and machinery fully, so it is assumed that only office electricity and other supporting power are used, not when the steel structure fabrication process takes place, as shown in Table IV.25 below. From the table, the electricity needs for one month can be estimated, where the daily electricity needs are 189.0 kWh/day × 20 working days × 1.75 safety margin (overtime operation, water pumps idling, etc.) = 6,600

kWh per month or 79,200 kWh per year.

Table 6 Electricity baseline consumption

Load	Qty	kW/unit	Total kW	Hours × Duty	kWh/day
LED workshop lighting (150 W high-bay)	40	0.15	6.0	10 hr × 100%	60.0
Perimeter lighting (100 W)	20	0.10	2.0	10 hr × 100%	20.0
Office equipment: PCs, printers	6	0.25	1.5	8 hr × 100%	12.0
Office equipment: AC	4	1.44	3.0	8 hr × 100%	24.0
Ventilation fans (fume extraction)	2	1.5	3.0	10 hr × 100%	30.0
Compressor idle (tank pressure cycling)	1	7.5	7.5	10 hr × 40%	30.0
Misc. tools standby (drills, band saw, etc.)	—	—	5.2	10 hr × 25%	13.0
Baseline Total (Per Day)					**189.0**
Baseline Total (Per Month)					**6,600**
Baseline Total (Per Year)					**79,200**

Net Cash Flow (CFt)

In the plan to operate a steel structure fabrication workshop in two candidate locations, including Bekasi City and West Bandung Regency, an operating cash flow (OCF) analysis was conducted to determine whether the business operations generate sufficient cash to maintain the existence of ZAN Construction's business. Components for analyzing this operating cash flow (OCF) include revenue projection, operating expenditure (OPEX), depreciation, and corporate tax, where revenue projection and operating expenditure (OPEX) have been analyzed and their values obtained in the previous sub-chapter. The straight-line method will be used to calculate the depreciation value component in accordance with the regulation of PMK 96 / PMK.03 / 2009 of the Ministry of Finance of the Republic of Indonesia. The items to be depreciated consist of workshop building construction and equipment, which are then depreciated over 20 years and 8 years, with the investment value taken from the Initial Outlay (Io) value. This depreciation value is used as a deduction from revenue along with operating expenditure to produce Earnings Before Interest and Tax (EBIT). The EBIT value is then reduced by the corporate income tax rate of 22% to generate Earnings After Tax (EAT). Since depreciation is not a cash payment and leaves no cash in the bank account, it is then added back to obtain Operating Cash Flow (OCF), as shown in Table IV.30 and IV.31.

After the value of the operating cash flow (OCF) is obtained, the analysis continues by calculating the net cash flow (CFt) value, which is the complete cash position including investment and recovery. However, there is one other component besides operating cash flow (OCF) and initial outlay (Io) for calculating net cash flow (CFt): the terminal value. The components of the terminal value of this steel structure fabrication workshop include land salvage, which has no depreciation according to PSAK 16; building and equipment salvage, whose book value is adjusted to the age of the workshop, which is 10 years, and added in the tenth year as the total terminal value. From all these components**, the net cash** flow (CFt) can be calculated, as presented in Table IV.30 and IV.31.

Sensitivity Analysis

A consolidated recap of the sensitivity analysis is presented in Tables IV.39 and IV.40 for Kota Bekasi and Kabupaten Bandung Barat, respectively. The recap reports Net Present Value, Internal Rate

of Return, and Simple Payback Period across three scenarios: minimum (-5%), Base Case, and Maximum (+5%) for each of the five variables examined. The results confirm that both locations remain feasible under every ±5% one-way deviation tested: NPV stays positive, IRR continues to exceed the 11.54% weighted-average cost of capital hurdle, and Payback Period remains within the project's ten-year horizon across all variable shocks.

Table 7 Sensitivity analysis recap (Kota Bekasi)

Variable	Metrics	Min (-5%)	Base Case	Max (+5%)
Raw Steel Price	NPV (IDR Billion)	33.42	30.07	26.73
	IRR	27.36%	25.87%	24.36%
	Payback Period	4 years, 3 months	4 years, 6 months	4 years, 9 months
Production Volume	NPV (IDR Billion)	26.87	30.07	33.28
	IRR	24.44%	25.87%	27.28%
	Payback Period	4 years, 8 months	4 years, 6 months	4 years, 4 months
Labor Cost	NPV (IDR Billion)	30.65	30.07	29.49
	IRR	26.14%	25.87%	25.60%
	Payback Period	4 years, 5 months	4 years, 6 months	4 years, 6 months
Consumables Cost	NPV (IDR Billion)	30.65	30.07	29.50
	IRR	26.13%	25.87%	25.62%
	Payback Period	4 years, 5 months	4 years, 6 months	4 years, 6 months
Transport / Logistics	NPV (IDR Billion)	30.17	30.07	29.98
	IRR	25.92%	25.87%	25.83%
	Payback Period	4 years, 6 months	4 years, 6 months	4 years, 6 months

Raw Steel Price (Tier 1)

A ±5% movement in Raw Steel Price produces an NPV swing of approximately ±IDR 3.35 billion in Kota Bekasi and ±IDR 3.43 billion in Kabupaten Bandung Barat, the largest sensitivity on the cost side and warrants the most structured mitigation program among the five variables examined. The Indonesian flat steel market is supplied principally by PT. Krakatau Steel (approximately 44% of domestic hot-rolled coil), PT. Krakatau Posco (the integrated mill JV with POSCO operational since 2014 in Cilegon), and secondary suppliers including PT. Gunung Garuda. The Company should maintain a multi-supplier qualification roster of at least three domestic sources and one import channel to preserve negotiating leverage. The 2017 episode, in which domestic HRC rose from USD 520 to USD 629 per tonne over six months (Trading Economics, 2026) confirms that single-source dependency is materially riskier than the sensitivity number suggests. For projects of twelve months or longer, cost-pass-through clauses or index linkage to a published Krakatau Steel reference price transfer steel price risk to the buyer. Where index linkage is not accepted, a strategic inventory buffer of two to three months of forward production smooths short-term price spikes without locking in excess working capital.

Production Volume (Tier 1)

Production volume that moves ±5% produces an NPV swing of approximately ±IDR 3.21 billion in Kota Bekasi and ±IDR 3.07 billion in Kabupaten Bandung Barat. Volume sensitivity captures the workshop's ability to achieve the planned utilization trajectory of 50% in Year 1, rising to 90% in Year 10. The Company benefits from a structural tailwind: the RPJMN 2025–2029 commits Indonesia to IDR 1,905.3 trillion of infrastructure investment, of which approximately IDR 698.6 trillion will be procured outside the central state budget through PSN and PPP channels (UGM CTLog, 2025). Two mitigation pathways are appropriate. First, the Company should accelerate SBU upgrade from K3 small-enterprise classification to M1 medium-enterprise grade, which removes the IDR 2.5 billion APBN tender ceiling. Second, the customer base should be diversified across infrastructure projects (bridges, toll roads, PSN) and industrial fabrication (manufacturing plants, warehouse) to reduce concentration in any single sub-sector.

Labor Costs (Tier 2)

Although the financial sensitivity is modest, labor in fabrication is inseparable from labor quality, and the Company should approach labor risk as a capability-protection issue rather than a cost-compression target. A ±5% movement in labor cost produces an NPV swing of approximately ±IDR 0.58 billion in Kota Bekasi and ±IDR 0.49 billion in Kabupaten Bandung Barat. The labor cost structure is anchored by regional minimum wages (UMK) set annually by the West Java Governor's decree: IDR 5,938,885 for Kota Bekasi and IDR 3,984,711 for Kabupaten Bandung Barat in 2025. This 49% UMK differential is the principal cost-driven reason that Kabupaten Bandung Barat achieves a higher NPV than Kota Bekasi. The principal labor risk is not cost increase but skill availability: Indonesia faces a documented shortage of certified welders and qualified fitters, particularly for AWS D1.1 and BKI-certified structural welding. The Company should establish a multi-year workforce development plan combining partnership with Balai Latihan Kerja (BLK) vocational training centers, an in-house welder certification program, and BNSP-aligned competency assessment. Above-UMK retention compensation materially reduces the more damaging risk of fabrication quality failures.

Consumables Costs (Tier 2)

Welding consumables, including wire, electrodes, shielding gas, grinding discs, and abrasives, represent a small share of total cost and exert limited influence on project NPV. Consumables sourcing in Indonesia is supported by multiple domestic and regional suppliers, including PT. Esab Indonesia, PT. Lincoln Electric Indonesia, and several distributors of ITW-branded products. Therefore, supply continuity is not a binding constraint, and the Company should pursue routine procurement discipline through quarterly competitive quotations among three to four qualified suppliers, with award decisions weighted toward consistent product quality and delivery reliability rather than lowest unit price alone. Aggressive cost-cutting in consumables is unwarranted given the limited NPV impact and the operational risk that off-specification welding wire or low-quality shielding gas creates for fabrication quality. The Company should maintain technical specifications aligned to AWS A5.18 and AWS A5.20 for SMAW and GMAW consumables respectively, with supplier qualification including mill test certificates and consistent batch traceability.

Strategic Industry Business Analysis - Porter’s Five Forces

This sub-chapter uses Porter's Five Forces framework to evaluate the competitive

intensity, attractiveness, and long-term profitability of the steel structure fabrication industry. The five forces analyzed include the threat of new entrants, the bargaining power of buyers and suppliers, substitute products, and industry rivalry.

Threats of New Entrance

In the steel structure fabrication industry, the threat of new competitors is moderate. The main barriers to entry are the large initial outlay required and the complex legal requirements that must be met before a workshop can operate. The largest components of the initial outlay are land acquisition costs, civil construction work, and heavy equipment procurement. Land acquisition costs vary by region; for example, land values in the industrial area of Bekasi City are higher than those in the industrial area of West Bandung Regency due to the greater number of suppliers, buyers, and accessibility, which drive land prices higher. This feasibility study analysis indicates a large initial capital requirement of IDR 28.8 billion in Bekasi City and IDR 22.1 billion in West Bandung Regency, covering land acquisition, workshop construction, equipment procurement, working capital, and pre-operational costs. This initial capital burden discourages the entry of non-specialized general contractors, but remains affordable for well-capitalized contractors or diversified construction holding companies. The industrial corridor in Bekasi City and its surroundings shows a more competitive environment, with several companies actively fabricating steel structures, including PT. Cakra Jaya Presisi, PT. Mitra Karya Industri, PT. Jagat Baja Prima Utama, PT. Citramas Jaya Teknik Mandiri, and PT. Rafindo Iron Steel. Contradictory to the conditions in the industrial corridor of West Bandung Regency, which has a smaller number of companies, such as PT. Multibrata Anugerah Utama, PT. Dirgantara Yudha Artha, and CV. Baja Sakti Utama.

Threat of Substitute Products

According to SNI 07-7178-2006, profile steel is a structural material for civil engineering structures (buildings, bridges, piers, etc.), requiring safety and security factors. This profile steel product has quality requirements and mechanical properties that must be met to ensure that the product complies with safety and security requirements during fabrication, installation, and its function as a load-bearing structure. In addition to having identical mechanical characteristics, this profile steel product is also used to speed up construction and save costs. Profile steel products produced by manufacturers can be directly refabricated according to structural design requirements, then delivered to the project work location, and can be immediately erected and finished. The ease of installation, economic value, and characteristics of this profile steel material have made it the primary choice for project owners. The downside of this profile steel is that it will increase project costs if used in small quantities, such as short-span bridges under 30 meters or housing construction where shipping and installation costs are the same or tend to be greater than the cost of material procurement. From these conditions, the threat of substitute products is categorized as moderate.

Strategic Industry Business Analysis - SWOT Analysis

This sub-chapter utilized a SWOT analysis to evaluate the internal and external environments of the proposed steel fabrication workshop project. By analyzing ZAN's internal strengths, weaknesses, external opportunities, and threats, this framework provides a structured foundation for strategic decision-making. The matrix balances the project's empirical history, such as the opportunity losses on the Ciselang Bridge project in West Java, with broader macroeconomic shifts to formulate a sustainable and financially viable market-entry strategy.

Strength

The investment background for this steel structure fabrication workshop project is based on a documented lost opportunity from a previous project. During the tender process for the Ciselang Bridge project in West Java, the company was unable to participate in the material supply, fabrication, and delivery work package, estimated at IDR 793,000,000, due to the lack of internal steel structure fabrication capabilities. As a result of this limitation, the company was only awarded the installation or bridge construction work package, thus absorbing only a small portion of the total project value. This case provides direct empirical evidence that reflects market demand for steel structure fabrication services and provides a rational investment that reflects past losses, not just projections of future opportunities.

From the results of the capital budgeting analysis that has been conducted, this study confirms the strong financial feasibility of investing in steel structure fabrication workshops in both candidate locations. The Net Present Value (NPV) generated in both candidate locations is positive at IDR 30 B for Bekasi City and IDR 33 B for West Bandung Regency, which indicates that the investment generates profits or current wealth that exceeds the required expenditure or initial investment. The Internal Rate of Return (IRR) of 25.87% in Bekasi City and 31.77% in West Bandung Regency exceeds the average WACC hurdle rate of 11.54%, which indicates a substantial buffer against investment cost uncertainty. The Profitability Index (PI) of 2.04 in Bekasi City and 2.51 in West Bandung Regency confirms that every IDR 1 invested will generate a value of more than IDR 2 in present value, and the discounted payback period (DPBP) of 5.78 years in Bekasi City and 4.66 years in West Bandung indicates the recovery of the initial investment within the 10-year planning period of the workshop's operation.

Weakness

The company's current K3 Business Entity Certification (SBU) qualification limits participation in public construction tenders funded by the state budget to IDR 2.5 billion per package. This limitation makes it difficult for the company to achieve its projected workshop revenue of IDR 18.6 billion in the first year and IDR 49.4 billion in the tenth year, which is substantially inconsistent with the public tender package cap of IDR 2.5 billion per work package. Until the company upgrades its SBU qualification to Medium Qualification (M-1), it is limited to the private and industrial market segments for contracts above the small business threshold, although it can commercially access existing client bases.

Opportunities

According to Mordor Intelligence (2026), Indonesia's 2025-2029 National Medium-Term Development Plan (RPJMN) allocates USD 25.8 billion for road projects, mass transportation bridges, and energy transition infrastructure, representing the most substantial five-year infrastructure commitment in the post-reform era. The derivatives of this project line will create a constant demand for several years distributed nationally for steel structure fabrication services in various types of projects, such as highway bridges, toll road bridges, to industrial plant structures related to the downstream agenda of the project. For ZAN Construction, the presence of this national project represents a market that can be maximized by the Company to achieve profits which have been institutionally approved by the government.

With the issuance of PUPR Ministerial Regulation No. 8 of 2022 and PUPR Ministerial

Regulation No. 6 of 2021, which provides a procedural path for upgrading SBU qualifications from small qualifications (K1-K3) to medium qualifications (M1-M2), to large qualifications (B1-B2). This SBU qualification upgrade can be taken by the Company within 3 to 5 years from the workshop's operation, assuming the workshop can achieve the projected revenue target in the financial model. Thus, the financial model, the Company's track record, financial standing, and personnel capacity will support a credible application for medium qualification upgrades (M1). By obtaining this qualification upgrade, the company opens up participation to participate in construction tenders worth IDR 2.5 billion to IDR 50 billion per work package, which is an upgrade that is in line with the industrial infrastructure projects that are ZAN Construction's target market.

Threats

The volatility of steel raw material prices creates the risk of margin compression for steel structural fabricators who are unable to hedge their procurement positions. Hot-Rolled Coil (HRC) steel, the basic steel raw material used in the steel structural fabrication industry, traded at USD 1,085 per metric ton in April 2026, a 3.24% increase month-on-month (Trading Economics, 2026). This raw material price volatility has an impact on domestic steel producers, such as PT. Gunung Garida Paksi Tbk (GGRP), one of the largest structural steel producers in Indonesia, which experienced a full-year net loss of IDR 618.2 billion in 2025, after previously achieving a profit of IDR 1.99 trillion in 2024, as a consequence of continued margin pressure from this raw material price volatility (IndoPremier Research, 2026). For this reason, the company needs to carefully observe the price volatility and purchase contracts for this steel raw material, even though it has conducted a sensitivity analysis that shows the break-even-point value for the risk of increasing the price of this steel raw material is 44.90% in Bekasi City and 48.94% in West Bandung Regency.

CONCLUSION

The result of the analysis on financial feasibility that has been conducted for a steel structure fabrication workshop project indicates it is feasible to implement at both proposed locations, Kota Bekasi and Kabupaten Bandung Barat. The analysis established that it utilizes a 10-year financial projection model, comprising the initial outlay, revenue forecast, cost of goods sold, working capital, and operating expenditure assumptions. The capital budgeting metrics present a positive Net Present Value (NPV) of IDR 30.07 B for Kota Bekasi and IDR 33.56 B for Kabupaten Bandung Barat, an Internal Rate of Return (IRR) of 25.87% for Kota Bekasi and 31.77% for Kabupaten Bandung Barat, both surpassing the hurdle rate of 11.54%. Profitability Index (PI) shows positive results of 2.04 for Kota Bekasi and 2.51 for Kabupaten Bandung Barat. Finally, the discounted Payback Period (PBP) meets the time horizon of the project at 5.78 years for Kota Bekasi and 4.66 years for Kabupaten Bandung Barat. Based on this result, the Company should choose Kabupaten Bandung Barat as the location for a steel-structure fabrication workshop, as this location shows superior financial performance compared to Kota Bekasi.

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