Value Investment Analysis of Engineering and Construction Companies in the United States: A Case Study of KBR

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Abstract. With global warming and increasing emphasis on environmental protection and sustainable development, engineering and construction companies face significant transformation and challenges. This study builds a value-investment-based comprehensive assessment framework with financial and non-financial indicators. Using KBR as a case study, the research examines financial data and non-financial information from 2020 to 2024. Quantitative and qualitative methods are applied to evaluate KBR's competitive advantages in sustainable and digital eras. The results show that KBR possesses strong value investment potential. Financially, the company demonstrates solid solvency, efficient operational capacity, and promising growth potential, despite short-term earnings volatility. Non-financially, KBR is recognized as an industry leader in employee satisfaction, sustainable practices, and corporate governance, though brand recognition lags. The study further analyzes risk factors such as dependence on key customers, climate-related uncertainties, and earnings fluctuations. Investment recommendations suggest that long-term investors may benefit from KBR's stable outlook, while short-term investors are advised to monitor market timing and external conditions carefully. Overall, this research provides insights that support the use of an integrated assessment framework and offers practical guidance for investors considering exposure to the engineering and construction sector.

1 Introduction

In recent years, the global economy has developed rapidly, and technology has advanced at an unprecedented pace. At the same time, the problem of climate change has grown more serious. Human activities, especially the burning of fossil fuels and deforestation since the period of industrialization, have led to the emission of large quantities of greenhouse gases such as carbon dioxide and methane. These gases accumulate in the atmosphere and intensify the greenhouse effect. As a result, global temperatures have risen, causing changes in weather patterns and affecting ecosystems worldwide. Climate warming has led to an increase in extreme weather events, destruction of ecosystems, reduced crop yields, and public health

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challenges. Carbon emissions, which are largely linked to industrial activities, have become one of the main concerns of modern society.

Engineering and construction activities are estimated to account for 36% of global carbon dioxide emissions. This reality has forced governments, enterprises, and international organizations to embrace the concept of sustainable development. In parallel, the construction industry, known for its complicated processes and numerous stakeholders, is undergoing a radical change. New technologies, such as artificial intelligence and digital tools, are now used to optimize design, planning, and construction practices. These innovations support the shift towards green materials, low-carbon technologies, and digital innovation. This transformation means that engineering and construction companies are no longer able to rely solely on traditional business models. They must adapt to meet external challenges and opportunities created by emerging markets and technological shifts.

Financial indicators have long been used as the primary tools for enterprise evaluation. Indicators such as net profit margin, return on assets (ROA), and return on equity (ROE) quantify the financial performance of a company and provide clear measures of profitability and asset utilization. However, with the growing importance of environmental, social, and governance (ESG) standards, non-financial metrics have gained prominence. Non-financial indicators, such as customer satisfaction, employee loyalty, sustainable construction practices, and the extent of ESG disclosure, reveal important aspects of a company's long-term competitiveness and commitment to social responsibility. These measures are critical when evaluating a company's overall value and risk profile.

This study focuses on combining both financial and non-financial indicators to develop a comprehensive framework for evaluating the investment value of engineering and construction companies. By examining KBR, a well-known U.S. engineering and construction company, this paper provides an in-depth case study to illustrate how integrated assessment can reveal a company's strengths and vulnerabilities. The research begins by outlining the theoretical foundations behind financial ratios and non-financial performance measures. It then reviews the current state and challenges of the engineering and construction industry in the context of global sustainability trends. A detailed analysis of KBR's performance from 2020 to 2024 is presented, with a focus on key financial ratios, operational efficiency, and growth metrics. At the same time, the study examines qualitative factors such as employee satisfaction, brand recognition, sustainable practices, and corporate governance.

The significance of this study is evident for both academic research and investment practice. As investors seek opportunities in a rapidly changing market environment, it is crucial to have a balanced view that incorporates traditional financial metrics and broader sustainability measures. The analysis provides a detailed review of KBR's performance, highlighting both its financial strengths and the potential risks associated with its business model and external environment. With the increasing push for digital transformation and sustainable technologies, this research emphasizes the importance of strategic adjustments and risk management for long-term success. In addition, the study reflects on how external factors such as climate change, evolving government regulations, and technological innovations affect industry dynamics and company performance.

This paper also addresses the challenges in merging quantitative financial data with qualitative assessments. It shows that while financial indicators provide clear numerical benchmarks, non-financial indicators offer valuable context and insight into a company's operational and strategic posture. The integrated approach used in this study serves as a guide for investors and managers who aim to evaluate investment value comprehensively. The discussion includes an overview of market trends, industry challenges, and emerging technologies that drive change in the sector. The need to balance risk and opportunity is underscored throughout the introduction, as the paper establishes the basis for a more nuanced understanding of value investment in the engineering and construction industry.

2 Theoretical foundation

2.1 Financial indicators

Financial indicators have long served as the backbone for evaluating enterprise performance. They are calculated using fixed formulas and allow for the systematic use of historical financial data to forecast future development. This paper examines solvency, profitability, operating capacity, and growth indicators to assess financial health.

Solvency indicators are divided into short-term and long-term measures. The current ratio is an essential metric for liquidity management. A higher current ratio indicates that a company can meet its short-term liabilities with its current assets. Long-term solvency is often measured using the debt-to-equity ratio and the interest coverage ratio. A lower reliance on debt financing and a solid base for future obligations are signs of a healthy company. These ratios are particularly important in sectors where large-scale projects require significant capital investments, as seen in the engineering and construction industry [1]. Investors rely on these metrics to gauge whether a company is over-leveraged or has sufficient financial flexibility.

Profitability indicators such as net profit margin, ROE, and ROA are essential for understanding how well a company converts revenue into profit. A high net profit margin suggests that the company is efficient in its operations and cost management [2]. ROE indicates how effectively the company uses shareholder funds to generate earnings, and ROA measures how well total assets are being utilized to produce profit. These indicators help determine if the business is on the right track for sustainable growth and if it can reward investors over the long term. Each of these financial indicators, when analyzed together, provides a comprehensive picture of the company's performance from multiple perspectives.

Operating capacity indicators, including accounts receivable turnover and total asset turnover, further illustrate how efficiently a company manages its resources. The accounts receivable turnover indicates the speed at which a company collects its outstanding balances, while the total asset turnover reveals how effectively a company is using its assets to generate revenue [3, 4]. For companies operating in large-scale projects, operational efficiency is a key determinant of profitability. A higher turnover ratio generally reflects good management practices and operational control. These measures are critical in an industry where delays and inefficiencies can have significant financial repercussions.

Growth capacity indicators are also crucial for evaluating a company's future potential. Revenue growth rate and earnings per share (EPS) growth rate are vital signs of expansion. A high revenue growth rate is often associated with a competitive position in the market, while an increasing EPS indicates improved profitability over time [5]. Growth capacity indicators not only measure the company's expansion but also serve as risk indicators. Companies that consistently report low EPS growth might be more vulnerable during periods of economic downturn. In industries characterized by cyclical fluctuations, these growth indicators provide insight into both the potential and the inherent risks of the business.

2.2 Non-financial indicators

Non-financial indicators complement financial measures by providing insight into aspects that are not immediately evident from numerical data. Market indicators, such as customer satisfaction and brand awareness, reveal how well the company is perceived in the marketplace. For instance, high customer satisfaction rates typically signal strong service quality and product reliability [6]. However, brand awareness is also important because it affects customer loyalty and long-term revenue streams. Social indicators, including employee satisfaction and the protection of consumer rights, provide further evidence of a

company's internal strengths. High employee satisfaction is often linked to efficient operations and innovation. In the engineering and construction industry, maintaining high standards in both employee treatment and consumer rights is essential for sustained success [7].

Environmental indicators are gaining importance as companies are expected to manage resources responsibly. Resource management practices, such as efficient energy and water use, are key components of environmental compliance. Sustainable construction practices that minimize waste and reduce emissions are increasingly essential for achieving competitive advantages in the market [8]. Such practices not only lower production costs but also align the company with global trends in sustainability. Governance indicators, including board structure and ESG disclosure practices, reflect the company's commitment to transparent and effective management [9]. A robust governance structure can mitigate risks and ensure that the company's strategies are executed properly.

In summary, the theoretical foundation for this study is built upon a careful examination of both financial and non-financial indicators. The combined analysis of these metrics forms the basis for a comprehensive evaluation of a company's overall health and prospects. The integrated approach serves as a guide for investors who require a balanced perspective on both quantitative and qualitative factors.

3 Industry overview

The engineering and construction (E&C) industry is currently undergoing significant changes. Environmental challenges such as waste and pollution have forced the industry to rethink its processes. E&C activities contribute substantially to global CO_2 emissions, estimated at 36%, which underscores the urgent need for sustainable practices [10]. This context has spurred an increase in investments related to green energy and infrastructure. The industry has responded by adopting new technologies and innovative business models. These advancements include the integration of digital technologies that streamline project management and reduce waste. New trends, such as the adoption of artificial intelligence and the Internet of Things, are reshaping construction practices by making them more efficient and less resource intensive [11].

The traditional business models of E&C companies are built around fixed contracts and linear project execution. Models like Design-Bid-Build (DBB), Design-Build (DB), and Engineering, Procurement, and Construction (EPC) have served the industry well. In the DBB model, the design and construction are separated into different contracts. Although this model provides owners with greater control, it requires close coordination among multiple parties. In the DB model, a single company handles both design and construction, thus reducing project durations. The EPC model assigns one contractor the responsibility for design, procurement, and construction. This model demands strong financial and technical capabilities to avoid cost overruns and delays [12].

The evolution of the industry is also marked by a move toward innovative business models. Digital transformation has introduced tools such as Building Information Modeling (BIM), which creates detailed digital representations of projects. BIM is now a vital element in sustainable design, project scheduling, and cost estimation [13]. Simultaneously, green building practices have emerged to meet environmental and sustainability goals. The use of environmentally friendly materials, efficient resource management, and low-carbon technologies has become central to the competitive advantage of E&C companies [14]. Such trends are reshaping the market and opening new business opportunities in emerging regions like Asia-Pacific and Latin America. These shifts have significant implications for both market competition and the long-term investment outlook of companies in this sector.

Market competition in the E&C industry is intense. Companies gain competitive advantages through technological expertise, strong brand reputation, and international market presence. Leaders in the field have been able to leverage their technological innovations and long histories of success to secure major contracts. In addition, globalization has enabled companies to adapt to local market needs by diversifying their service offerings. This adaptability has allowed them to capture a larger share of international markets. In this dynamic environment, continuous innovation and strategic investment in sustainability and digital transformation are critical for maintaining competitive edge.

4 Case study of KBR

KBR is an American engineering and construction company that operates in diverse fields such as aerospace, defense, and industrial services. The company has long been associated with government agencies and is involved in projects for entities like NASA. Over the years, KBR has undergone several strategic transformations and business restructurings, expanded its scope and enhanced its technological capabilities. The company has increasingly focused on sustainable technology solutions, advanced design, and integrated digital tools [15]. KBR has invested in AI networks and natural language processing to improve efficiency and data analysis. These initiatives have allowed the company to remain at the forefront of the industry.

4.1 Financial performance

Based on KBR's financial statements for the years 2020-2023 [16], the key financial performance indicators are collected and listed in Table 1 as below.

Table 1. Key Financial Performance Metrics 2020-2023

	2023	2022	2021	2020
Current ratio	105.03%	95.94%	114.77%	112.30%
Debt to equity ratio	302.39%	243.58%	271.72%	261.08%
Interest to coverage ratio	-44.35%	426.44%	282.50%	80.56%
Net profit margin	-3.81%	2.89%	0.37%	-1.09%
ROA	-4.76%	3.23%	0.45%	
ROE	-17.65%	11.55%	1.66%	
Accounts receivable turnover	7.23	5.58	6.35	
Total assets turnover	1.25	1.12	1.23	
Revenue growth rate	21.27%	0.47%	43.87%	

In terms of solvency, KBR's current ratio reaches 105.03% in 2023, which is an improvement from 95.94% in 2022. This means that the company's short-term solvency has increased and is at a healthy level, and the company has better liquidity management. KBR's debt-to-equity ratio reaches 302.39% in 2023, which indicates that the company has a high level of leverage and that the funds are available to support the needs of large-scale projects. Overall, KBR has a strong short-term debt servicing capacity with a trend of business expansion. Should KBR continue to manage its debt effectively, its overall financial stability is expected to improve.

In terms of profitability, KBR's net profit margin, ROA, and ROE were negative in 2023, indicating short-term volatility in the company. However, in 2022, these profitability measures reached a considerably better level, indicating that the company can generate substantial returns in a favorable operating environment. KBR's volatility in financial indicators in recent years may reflect that the company is in the process of business transformation or strategic restructuring.

In terms of operating capacity, KBR's accounts receivable turnover improved to 7.23 times in 2023 from 5.58 times in 2022, while total assets turnover improved to 1.25 times in 2023 from 1.12 times in 2022. These improvements indicate that the company has significantly enhanced its efficiency in managing receivables and utilizing its assets. The enhanced operational management and asset utilization efficiency are positive signs for investors, suggesting that KBR can continue to improve its performance. Such improvements are critical for sustaining long-term profitability and competitive advantage.

In terms of growth capacity, KBR's revenue growth rate of 21.27% in 2023 shows significant growth, much higher than 0.47% in 2022. This indicates that the company's business expansion is gaining momentum. As of January 2025, KBR's EPS growth rate and revenue growth rate are both at high levels, greater than 16%, and not too different from each other, based on recent quarterly and forecast data provided on the website. This similarity between revenue and EPS growth suggests that the company is not only expanding its operations but is also converting this growth into profit. Overall, KBR has demonstrated strong growth and good profitability prospects and is expected to continue to be highly competitive in the market in the future.

From a comprehensive financial perspective, KBR exhibits strong solvency, improving operating capacity, and notable growth potential. The decline in profitability observed in 2023 appears to be a short-term fluctuation, likely resulting from transitional challenges. With appropriate strategic adjustments, the company is well positioned to recover and further improve its financial performance.

4.2 Non-financial performance

Non-financial performance also provides a robust picture of KBR's overall health. The company shows high levels of customer loyalty and satisfaction, with customer satisfaction and loyalty rates around 75 to 76 percent. However, its Net Promoter Score (NPS) remains low, which suggests that brand awareness is an area for improvement. In the social domain, employee satisfaction is high due to competitive compensation, flexible work schedules, and ongoing professional development programs. Initiatives such as flexible work arrangements and global discount programs have contributed to a positive work environment, as reflected in external reviews [7].

KBR's environmental performance is another strong point. The company has developed advanced recycling technology for plastics and sustainable solutions for clean fuels. Technologies such as sustainable aviation fuel and e-Methanol have positioned KBR as a leader in reducing the environmental footprint of its operations. Additionally, its green ammonia technology offers promise for reducing CO_2 emissions in chemical production.

Such innovations are critical in an industry where regulatory and consumer pressures increasingly demand environmental responsibility.

Governance at KBR is robust, with a board composed mostly of independent directors and clear separation between the roles of chairman and CEO. Regular board meetings and dedicated committees for sustainability ensure that decision-making is transparent and comprehensive. In 2023, KBR received an AAA rating in ESG assessments, reflecting its strong internal controls and risk management practices [9, 17].

Risk factors for KBR have been identified in three main areas. First, the company is heavily dependent on a few key customers. Any changes in these customer relationships or project delays can have a significant impact on revenue. Second, climate-related risks such as extreme weather events can disrupt operations and increase project costs. Lastly, fluctuating earnings—likely due to project delays and unexpected cost overruns—present challenges for maintaining stable profitability. Effective risk management is crucial for mitigating these concerns and ensuring long-term competitiveness.

4.3 Investment recommendation

KBR presents strong value investment potential for long-term investors seeking stable growth and sustainable practices. The company's strategic positioning in digital transformation and green technology aligns with global trends and offers competitive advantages in an evolving market. KBR's robust relationships with governments and major organizations support stable cash flows over the long run. Based on the comprehensive analysis of both financial and non-financial indicators, the investment recommendation for long-term stakeholders is to consider a phased accumulation of KBR stock during periods of market volatility. This research recommends that investors construct diversified portfolios to mitigate risks associated with short-term fluctuations.

For short-term investors, caution is advised because of the recent earnings volatility. It is recommended that short-term stakeholders monitor project bidding cycles and technological breakthroughs that could lead to short-term valuation improvements. Furthermore, close observation of regulatory changes related to climate and environmental policies is necessary, as these factors may have significant impacts on project costs and revenues. This research emphasizes that effective risk management, timely market entry, and careful tracking of external economic indicators are critical for any investment decision in the E&C sector.

The integrated analysis of KBR suggests that while short-term challenges exist, the company is well positioned for long-term growth. The combination of strong operational efficiency, sustainable innovation, and sound governance practices provides a solid foundation for value investment. This study underscores that investors should conduct thorough research and continuous monitoring in order to adapt to evolving market conditions and technological advancements.

5 Conclusion

This research has reviewed both the theoretical foundations and the practical case of KBR as an example of value investment analysis in the engineering and construction sector. The study has shown that a comprehensive evaluation—using financial indicators such as solvency, profitability, operating efficiency, and growth capacity, alongside non-financial indicators like market performance, social responsibility, environmental sustainability, and governance—can provide a balanced view of a company's value.

The case study of KBR demonstrates that, despite short-term fluctuations in profitability, the company exhibits strong operational efficiency, robust growth capacity, and a deep commitment to sustainable practices. These factors, when considered together, suggest that

KBR is well prepared to face future challenges and is an attractive candidate for value investment. Furthermore, the company's proactive steps toward digital transformation and green technology not only contribute to its current success but also ensure its competitiveness in a rapidly evolving industry environment.

The investment recommendations provided in this study are based on the thorough analysis of both quantitative financial data and qualitative non-financial factors. Long-term investors may benefit from the stability offered by KBR's established relationships and technological strengths, while short-term investors should remain cautious due to inherent market volatility. This research underscores the importance of continuous monitoring and risk assessment as essential parts of an effective investment strategy in a dynamic global market.

Overall, this study contributes to the understanding of value investment in the engineering and construction sector by offering detailed insights into the evaluation process. It highlights that a balanced approach—incorporating both financial metrics and broader operational and strategic factors—can yield a clearer picture of a company's long-term value potential. As the industry continues to evolve in response to environmental challenges, technological advances, and market pressures, the analytical framework presented in this research will remain relevant and beneficial for both academic inquiry and practical investment decision-making.

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