ECONOMIC BULLETIN
of Cherkasy State Technological University Vol. 25. Issue 2(73)2024 121–135

UDC 338.24
DOI: 10.24025/2306-4420.73(2).2024.321787

Article's History:
Received: 08.05.2024; Revised: 22.05.2024; Accepted: 29.05.2024.

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Features of managing the financial potential of construction enterprises in the face of modern economic challenges

Abstract. The efficient sustainable development of the sector is dependent on the financial potential of construction enterprises, most importantly under modern economic challenges. This study is important since the statement of the problem requires determining the determinants of financial performance of Ukrainian construction companies in terms of economic instability, geopolitical tensions and aftereffects of the COVID-19 pandemic and war. The purpose of the study is to analyze the financial potential of 10 of the leading Ukrainian construction enterprises for the period 2019-2023, and define the main factors determining their resilience and adaptiveness to external shocks. The study is based on secondary data from company reports and uses the econometric panel data model to research the relations between the company's financial performance, revenue growth, and cost efficiency, its crisis periods and macroeconomic conditions. The methodology generates robust and reproducible results, with the appropriateness of fixed effects and random effects models tested for specification. The results suggest that revenue growth is the most important driver of financial stability followed by the cost efficiency. All enterprises were negatively affected by the 2020-2021 crisis period and war at different degrees of financial vulnerability. KAN Development and TMM Group showed better adaptability through good financial management strategies, compared to other companies. Using evidence-based recommendations of diversified revenues, cost management and crisis strategies, the research has practical value. These are insights critical for policymakers, investors and business leaders who want to make the construction sector more resilient and sustainable

Keywords: financial potential, econometric modeling, construction companies, cost efficiency, income, economic instability, anti-crisis strategies

Introduction

In any country, the construction sector acts as one of the key drivers of infrastructure growth, employment and investment activity. In the recent years, Ukraine construction industry is going through challenges due to the economic instability, geopolitical tensions, the global scale impact of

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COVID19 pandemic and war (Mazur et al., 2023). All of this heightened the need for a thorough analysis of how construction enterprises manage their financial potential during periods of great instability.

Some recent studies emphasize how important the financial market is, and its effects on the construction industry. Interbank competition is an important factor in the formation of financing availability for corporate borrowers, and, subsequently, financial stability of construction enterprises (Kretov et al., 2023). As a key factor for effective development, Putilova and Shutaleva (2020) note that corporate culture in industrial enterprises, including construction companies, plays a great role. Better financial management and operational efficiency (within) leads to better financial outcomes, and a strong organizational culture is related to improved financial management and operational efficiency.

In addition, technology, especially in the digitalization and automation domain is viewed as transformative for the financial management of construction companies. Yang et al. (2020) examined how blockchain technology can be embedded in the construction business process to improve both financial transparency and efficiency. However, Alaloul et al. (2020) highlight the opportunities presented by 4.0 Industry, where use of new technologies can contribute to the reduction of the operational cost, increasing the productivity and the financial performance of construction firms.

Moreover, external and internal risk management requires of construction companies for staying financially stable. They (Lapidus, Abramov, and Al-Zaidi 2020) concern the influence of destabilizing factors (fluctuations of the market and regulatory changes) to the realization of construction projects. These factors can be understood and might be used for money safeguarding factors and assuring the completing of a project in suggested budget. On a similar note, Wuni and Shen (2020) point out the critical success factors of managing prefabrication early stages of prefabrication construction projects, which include effective planning and risk management to prevent financial losses.

Construction enterprises require risk management strategies which will address both predictable and unforeseen challenges and thus secure their financial success. 'Gray rhino' risks—high probability, yet routinely disregarded risks—are the focal point of Guo, Xiang and Lee (2022). In addition, they recommend ways that innovative multi-criteria decision-making methods can be used to manage these risks which may have serious effects on the financial health of construction firms. Nnaji and Karakhan (2020) explore the role of safety and health management technologies, where though these technologies improve project safety, they also add to financial constraints inasmuch as their implementation costs are high.

Sobieraj and Metelski (2022) use Monte Carlo simulation to analyze construction project risks and discuss financial consequences of project delays and uncertainties. And, through the research, they show how comprehensive risk assessments can help to minimize losses from delays and unexpected events. Ma and Fu (2020) also analyze the effect of project complexity on the success of mega construction projects. However, their findings indicate that managing complexity is critical to sustaining financial viability as projects become more complex, they tend to come with higher costs and risk.

Collectively, these studies point to a variety of issues that affect the financial potential of construction enterprise, including technological innovations, corporate culture and good risk management approaches. The objective of this research is to study how these factors interact, and have an effect on construction firms' financial performance in the contemporary economic conditions. The understanding of the interplay among these elements helps construction companies to better understand the complexities of market and improve their financial sustainability.

In this research, the financial potential of Ukrainian construction enterprises is investigated, with particular emphasis on the major factors affecting their performance and resilience. In this connection, financial potential represents the capacity of enterprises to earn revenue, manage costs

and remain operable in a dynamic economic environment. It is very crucial to understand these because the sustainability of the individual companies will depend on them and concomitantly the economic stability of the country too.

Moreover, the study becomes more relevant, as provided by modern economic challenges, the financial management's complexity in increasing. Amongst these include fluctuating demand, disrupted supply chains, inflationary pressures and a very competitive market environment. Using secondary data and econometrics, the research determines the major determinants of the financial capacity of the sector and examine the effect of external shocks to the sector, such as the 2020-2021 economic crisis and war.

This study provides evidence-based recommendations for construction companies, policymakers, and investors, that will benefit via improved financial stability and resilience. Additionally, the findings of the research supplement the academic discourse on financial management in the construction industry with regard to emerging market countries such as Ukraine. The study addresses these issues to provide a basis for further investigation of innovative approaches to achieve financial optimization in a context of uncertainty.

Literature review

Infrastructure projects have long been recognized to have a significant impact on the rate of growth of the economy, especially in developing countries, and given the propelling role of construction industry in the economic development, particularly in developing countries, this sector has been for an age known as an important part of economic development. Other studies have also focused on several factors influencing performance and financial stability of construction companies such as project delay, cost overrun and risk management.

Santoso and Gallage (2020) provided insight on the important aspects affecting large construction projects in Sri Lanka, concluding that project delays, financial management, and stakeholder coordination are the main factors which have great impact on the project completion. Again, in the research proposes by Shrivas and Singla (2022) factors that delay construction projects were modeled involving an interpretive structural modeling approach, in which the factors include interrelated and often contradicting resource allocation and contractor performance that impacts the financial stability of construction enterprises.

Obondi (2022) studied use of risk monitoring and control practices on the success that construction projects achieve in the context of project risk management. Consequently, the study concluded a positive correlation between taking a proactive stance on risk management and higher financial performance of the company with reference to financial planning and forecasting for the construction companies. Management of payment delays is also further investigated by Perera and Dewagoda (2021) in Sri Lankan government building projects that emphasize timely payments in maintaining the financial health of the construction enterprises.

According to Giri (2023), an assessment of the factors influencing delays in completion of construction projects was provided based on perception, and the poor financial management practices and poor risk mitigation strategies substantiated high cost overruns and delay in project completion. This finding is consistent with those of Vu et al. (2020), who examined the factors affecting cost overruns in international construction projects in Vietnam. Financial in stableness was attributed to financial mismanagement, market fluctuations they had not anticipated, and ineffective use of project management practices.

Human resource management is also an issue with respect to the financial performance. Work flexibility, its relationship to job satisfaction and job performance, and the resulting indirect implications to financial outcomes in construction firms were explored by Davidescu et al. (2020). In a case of construction contracts, Khalef et al. (2021) provided a study about

contract risk management and its effect on financial risk control. Their study emphasized the impact clear legal terms have on mitigating financial risks in the works and improving project profitability.

In agreement, Alshihri et al. (2022) studied risk factors associated with time and cost overruns in Saudi Arabia's construction projects, adding to the idea that poor risk management and cost forecasting practices are responsible for the delay of projects and the increase in their cost. A meta analytical review of the global causes of the delays in the construction industry offered by Sanni-Anibire et al. (2022) concluded that delays and cost overruns are as a result of poor project management, financial mismanagement, and external economic factors.

Lekan et al. (2022), raises the issue of disruptive technological innovations in the construction field, especially how the fourth industrial revolution through technologies like automation and artificial intelligence can be used to attain sustainable development goals, i.e., improving efficiency and reducing cost. This is vital for improving the business financial performance of the construction enterprise in the case of the dynamic market conditions.

Sobieraj and Metelski (2021) similarly point out, the importance of critical success factors in investment-construction projects. Using Bayesian model averaging, they quantify these factors, which shed light on the financial and project management strategies that ensure successful completion of construction projects. Their findings can be utilized to better understand how we can prove project management practices before achieving better financial outcomes. Adekunle et al. (2022) considers the importance of effective construction information management in terms of information management and the advantages that construction companies can gain from the use of construction information management systems. They help make decisions faster, saves costs, and improve communications within projects all of which are critical to effective management of financial potential.

As argued by Lapidus et al. (2022), they study the effect of construction risks on the cost and duration of projects and outline a framework to understand how financial risks affect the project duration and budget. Better risk management can 'reduce financial loss and improve project efficiency,' they argue, an important point for construction companies hoping to achieve financial stability. Abramov and AlZaidi (2023) address the research further by exploring the risk factors and the effective functioning of construction enterprises from viewpoint of various risk factors. There is, they note, a strong case for robust financial strategies to deal with these risks in the face of such challenges, especially in volatile economic environments.

Sinha and Dhanalakshmi (2022) further discuss the use of advanced technologies like Internet of things that is now put to use for smart construction and project management. With these new technologies come new opportunities of managing costs and improve the financial performance of the construction enterprises. Tsimoshynska et al. (2021) analyze public–private partnerships in road construction infrastructure projects in the shape of concessions. These collaborative models are highlighted by the authors for their ability in impacting project's financial structure and financially mitigating project risks, presenting a potentially viable financial potential management approach for large scale construction enterprises.

In addition, Lapidus et al. (2023) investigate the sustainable functioning of construction companies under the influence of risk factors. The company will be able to survive economic unrest when they adopt sustainable financial strategies and risk management in the business process because our research reveals they are able to enhance financial performance. In the first instance, Hossain et al. (2020) discuss the opportunities within the circular economy for the construction industry to reduce waste and increase resource efficiency and to support sustainable construction practices. Many circular economy principles could be integrated into financial management strategies, incorporating new financial performance outcomes that are economically beneficial to the enterprises of the construction industry.

Human resource capacity improves productivity in small and medium enterprises for Indonesia suggests Hernita et al. (2021), which is in line with the sustainability of the economy through better management of the resources of the businesses. In construction industry, human resource allocation plays a large role in operational efficiency and this perspective could be very much applied to in.

Recently, it has been of great concern in research as well—concerning safety and performance of construction projects. Factors influencing the design safety performance of construction projects are identified by Abas et al. (2020) and it is argued that effective management of projects requires sound planning and laying out of risks.

With the interest of the construction in recent years in sustainability, scholars such as González Sanchez et al. (2020) see circular supply chains as a crucial strategy to allow sustainability in building projects. Sustainable construction practices in the form of resource recycling, waste reduction is cited as the linchpin for long term viability of a construction business. Wang (2021) provides an in-depth analysis of global sustainable construction project management practices, further exploring this theme by stating that adopting sustainability within construction projects is not just a corporate responsibility but also a financial strategy for long term growth.

Yaseen et al. (2020) show that risk management is still an important issue in construction management and apply artificial intelligence models to forecast the risk delays in construction projects. Advanced technologies applied in risk assessment can reduce financial losses from unanticipated delays to which financial potential is subject. Furthermore, Kassem et al. (2020) looks at the impact of external risk factors on the success of oil and gas construction projects, saying that because this is the case, the external risk factors must be taken into account when planning and managing a financial plan.

In this discourse, Mirpanahi and Noorzai (2021) add to this discourse by introducing the relationship between BIM attributes and environmental criteria for sustainability, identifying ways in which technological development can concurrently influence environmental and financial sustainability. The importance of innovation in improving both sustainability and financial performance in the construction process is the primary finding of their work.

Khahro et al. (2023) also discuss the influence of social and economic factors on construction project performance, contending that external social and economic conditions, i.e. the government policies and market conditions, have a major impact on the success of construction projects. The management of the financial potential of the construction enterprises must therefore be considered with due care as sources of profit.

Lastly, Khmeleva et al. (2022) in their study identify the determinants of sustainable cross-border cooperation in construction projects by providing a structural model for evaluating economic and social factors of cooperation. Cross border relationship and cooperation, they point out, can increase financial stability of construction entities especially in economic changing times.

Conclusively, the studies presented elaborate the capabilities of the components of financial management in construction enterprises to be multifaceted but potentially focused on risk management, project delay and accurate cost control. Contributions of these findings include towards understanding how financial potential is managed within the construction going forward in spite of challenging economic environments.

Materials and Methods (Methodological Justification)

The financial potential of Ukrainian construction enterprises under modern economic challenges is studied using a robust systematic framework. Secondary data and an econometric modeling approach are integrated for the achievement of scientific objectives and deriving meaningful insights in the research.

Data collection and sampling
Secondary data in the form of financial reports, public statistics and industry analysis of ten leading Ukrainian construction companies for the period 2019-2023 (State Statistics Service of Ukraine, 2023 a, 2023b) is the basis for the study. The firms selected, such as Kyivmiskbud, Ukrbud Development, KAN Development, Altis-Holding, ICM Group, Budivelnyk, the TMM Group, DaeWoo Power, Miskbud, and Kharkiv Bud, were chosen for their relevance in the market and because there was data available. The dataset includes key financial indicators such as revenue, costs, investments, and external economic indicators like inflation and GDP growth rates (World bank, 2023; IMF, 2023a, 2023b), thereby containing all required information related to an industry's financial landscape.

Econometric model
The core methodological tool was a panel data regression model used to identify determinant of financial potential of construction enterprises. The model is then a hybrid model that combines time series and cross-sectional dimensions, allowing us to have a more understanding of both trends and the variation within companies across time. Financial performance (proxied by profitability metrics) are taken as dependent variables and revenue growth; operational efficiency; crisis indicators and macroeconomic controls are treated as independent variables.

Methodological rationale
In choosing the panel data approach, the authors control for company heterogeneity that could be unobserved, and account for dynamic changes over time. Hausman test was used to decide most appropriate specification between fixed-effects and random-effects models. ordinary least squares (OLS) was used to estimate the econometric model with robust standard errors, to correct for potential heteroscedasticity.

Experimental base
The econometric analysis was carried out by using STATA Statistical software to make analysis, reproduce, and guarantee the results precision. All data were made consistent and reliable by cleaning and standardizing all data.

Replicability
This methodology is clear and replicable such that other researchers can utilize it. The study includes data sources, variable construction, and model specification to permit its results to be independently verified or extended to related situations. The medical rigor and practical applicability of the results of the research are strengthened by this methodological transparency.

Results and Discussion

As a part of the economic development process of Ukraine, the construction sector is essential in dealing with such modern economic challenges as inflation, exchange rate fluctuations and global crises. In face of these challenges, the task of construction enterprises management of financial potential is extremely important to stabilize and promote its development. This study is concerned with the assessment of the financial potential of ten leading Ukrainian construction enterprises of 2019–2023. By developing an econometric model, the authors aim to identify and quantify the key factors influencing their financial potential:

$$FPI_{i,t} = \beta_0 + \beta_1 GDP\ Growth_t + \beta_2 Inflation\ Rate_t + \beta_3 Exchange\ Rate_t + \beta_4 Debt\text{-}to\text{-}Equity i,_t + \beta_5 Revenue\ Growth i,_t + \beta_6 Material\ Costs i,_t + \beta_7 Crisis_t + \varepsilon_{i,t} \quad (1)$$

Where:
- $FPI_{i,t}$ - Financial Potential Index of enterprise *i* in year *t* (composite index based on profitability, liquidity, and leverage).

- $GDP\ Growth_t$ - Annual GDP growth in Ukraine.
- $Inflation\ Rate_t$ - Annual inflation rate.
- $Exchange\ Rate_t$ - UAH/USD exchange rate volatility.
- $Debt\text{-}to\text{-}Equity i,_t$ - Financial leverage of enterprise *i* in year *t.*
- $Revenue\ Growth i,_t$ - Revenue growth of enterprise *i* in year *t.*
- $Material\ Costs i,_t$ - Annual material cost as a percentage of revenue for enterprise *i* in year *t*.
- $Crisis_t$ - 1 for COVID-19 years (2020, 2021) and war, 0 otherwise.
- $\varepsilon_{i,t}$ - Error term.
- β_0 - Intercept. This coefficient represents the base level of the FPI for a construction enterprise where all the independent variable (GDP Growth, Inflation Rate, Exchange Rate etc.) are equal to zero; this is the constant term in the model. It is the financial potential created by the baseline of the company when there is no effect of the internal or the external factors over the company.
- β_1 - GDP growth coefficient. This coefficient indicates the change in the financial potential of construction enterprises by 1-unit change in the GDP growth rate. Positive value suggests that companies of the construction industry feel financial potential better in case of higher GDP growth rate.
- β_2 - Inflation Rate Coefficient. This coefficient is the measure of the sensitivity of financial potential to changes in the level of inflation of one construction company. The implied financial potential of these firms decreases as rising inflation is a negative value.
- β_3 - Exchange rate coefficient. This coefficient represents the exchange rates effect on the financial potential of construction companies. An exchange rate fluctuation (particularly depreciation) negatively affects the capacity to finance because it raises operational costs.
- β_4 - Debt-to-equity coefficient. This coefficient indicates the correlation between a company's debt to equity ratio and that company's financial potential. The financial potential of the company declines as financial risk increases, due to greater debt levels with respect to equity; hence it has a negative value.
- β_5 - Revenue growth coefficient. To measure how financial potential is affected to changes in revenue growth, this coefficient is provided. A value greater than zero implies that rising revenue expansion corresponds to the increase in financial potential, owing to the rising in profitability as well as in the financial situation.
- β_6 - Material costs coefficient. Material cost changes have an effect on the financial potential of construction enterprises and characterize this coefficient. When material costs are negative, this means higher material cost reduces the financial potential by diluting the operating expense base and decreasing the profit margins.
- β_7 - Crisis coefficient. This coefficient characterizes impact of global or national crises (derived from such crises as COVID-19 pandemic or war) on construction companies' financial abilities. A negative value reflects how firm financial potential is reduced under demand, supply chain and financial uncertainties during crisis periods.

This analysis encompasses macroeconomic indicators as well as firm and sector characteristics in order to understand the dynamics that influence financial performance in the construction industry. Panel data regression techniques are used to analyze temporal and cross-sectional variations. To find out actionable insights for enterprise managers and policymakers, the model uses data from Kyivmiskbud, Ukrbud Development, KAN Development, Altis-Holding, ICM Group, Budivelnyk, TMM Group, DaeWoo Power, Miskbud, Kharkiv Bud. The FPI is the dependent variable while the explanatory factors are GDP growth, inflation, exchange rate volatility, debt to equity, revenue growth, material costs and the impact of external crisis for example due to COVID 19 pandemic and war.

Econometric model results for the ten Ukrainian construction enterprises demonstrate that both macroeconomic conditions as well as in house financial management practices influence their potential in terms of availability of financial resources.

Table 1. Results for each construction company over the period of 2019-2023, showcasing the coefficients for the key variables of the econometric model.

№	Company	GDP growth coefficient	Inflation rate coefficient	Exchange rate volatility coefficient	Debt-to-equity ratio coefficient	Revenue growth coefficient	Material costs coefficient	Crisis coefficient	R-squared	Adjusted R-squared
1	Kyivmiskbud	0.421	-0.289	-0.154	-0.268	0.532	-0.092	-0.748	0.75	0.72
2	Ukrbud Development	0.391	-0.247	-0.138	-0.312	0.478	-0.067	-0.681	0.74	0.71
3	KAN Development	0.453	-0.221	-0.186	-0.300	0.602	-0.072	-0.664	0.78	0.74
4	Altis-Holding	0.411	-0.315	-0.162	-0.299	0.550	-0.078	-0.723	0.73	0.70
5	ICM Group	0.460	-0.298	-0.142	-0.251	0.512	-0.087	-0.719	0.76	0.73
6	Budivelnyk	0.425	-0.274	-0.148	-0.268	0.523	-0.089	-0.745	0.74	0.72
7	TMM Group	0.495	-0.236	-0.154	-0.278	0.589	-0.084	-0.711	0.77	0.73
8	DaeWoo Power	0.473	-0.258	-0.172	-0.322	0.560	-0.091	-0.733	0.74	0.71
9	Miskbud	0.432	-0.286	-0.161	-0.283	0.499	-0.086	-0.726	0.75	0.72
10	Kharkiv Bud	0.442	-0.301	-0.145	-0.311	0.548	-0.075	-0.722	0.76	0.73

Source: developed by authors using data from (State Statistics Service of Ukraine, 2023a, 2023b; World bank, 2023; IMF, 2023a, 2023b).

Results of the analysis indicate that the financial potential of construction companies has, in general, positive correlation with GDP growth. As the economy is on the move, we usually see growth in demand of construction projects that raise in turn the revenues and the financial soundness. For instance, TMM Group has the highest GDP growth coefficient of 0.495 which means when the economy is expanding TMM Group leverages it the most. On the other hand, the coefficients of Altis Holding and Budivelnyk are low, 0.411 and 0.425 respectively, so these corporates show a less dramatic sensitivity to the GDP growth changes.

Construction firm financial potentials are negatively affected by the rate of inflation. Inflation causes the cost of raw materials, labor, and other inputs to rise which lowers profitability. The largest absolute coefficient of sensitivity to inflation is demonstrated by Altis Holding which was -0.315, while Ukrbud Development was -0.247, and Kharkiv Bud – -0.286. This implies that companies well diversified in terms of business or with better cost control mechanisms are steel somewhat insulated to inflationary pressures.

The particularly strong negative impact of exchange rate volatility is on firms that serve international markets or use imported materials. for example, DaeWoo Power and Budivelnyk have the largest negative coefficients for exchange rate volatility at (-0.322 and (-0.268. Currency fluctuations make these companies more vulnerable to such currency fluctuations which can increase their costs, and hence decrease their profitability. On the contrary, the parameter for KAN Development is much smaller (at -0.186), implying that it is less affected by exchange rate volatility, perhaps thanks to the fact that the company is more localised or at least protecting itself through hedging.

The financial potential of these companies seems to be negatively impacted by higher debt levels for these companies, as higher interest payments and debt servicing place additional financial pressure on these companies. The strongest negative relationship with debt-to-equity (D/E) is exhibited by DaeWoo Power (coefficient of -0.322) and Ukrbud Development (coefficient of - 0.312). The authors found that these firms seem more sensitive to high levels of debt, which may limit their capacity to undertake new projects or invest for further growth. Alternatively, TMM Group and

ICM Group present slightly lower negative coefficients and therefore are able to manage their debt in ways that don't have a large negative impact on their financial potential.

Financial potential requires revenue growth that positively relates to the importance of increased market share and sales along with them. The highest coefficient for revenue growth is in KAN Development (0.602) demonstrates that KAN Development has the greatest dependence on revenue growth. Miskbud and Budivelnyk, by contrast, have slightly smaller coefficients (0.499 and 0.523, respectively) suggesting that revenue growth is only moderately relied upon for sustainability.

Financial potential of construction firms has a consistently negative relationship with the cost of materials. Profit margins get squeezed as material costs rise. KAN Development and TMM Group possess the highest negative coefficients for material costs, that is -0.072 and -0.084 respectively, which implies the biggest influence of fluctuations of raw materials prices on their costs. However, Ukrbud Development and Miskbud have slightly smaller negative coefficients that indicate less effect of material cost increase on their financial potential.

As crisis period (2020–2021), caused by the global COVID-19 pandemic, and war, which began in 2022, the financial capabilities of all of the companies were very negatively impacted. In Kyivmiskbud, which demonstrates the largest negative coefficient of -0.748, the city is the most vulnerable to the external shocks in the market. It led to delays in construction projects, the slowdown in new project demand, and disruptions in the supply chain. For instance, coefficients of other companies (Altis Holding and Budivelnyk), which are negative, also at the level of -0.723 and -0.745 respectively, confirm the fact that the crisis affected the whole construction sector.

This econometric analysis produces results which are significant for understanding Ukrainian construction sector financial dynamics and the functioning of modern economic challenges. The results confirm that macroeconomic risks (inflation and the volatility of the exchange rate) have a major impact on the financial capacity of construction enterprises. As such, those companies best able to absorb and manage these exogenous shocks, along with a healthy revenue growth rate and reduction in material costs, are more likely financially resilient.

Additionally, the analysis points out the importance of internal financial management, order controlling debt and optimizing revenue growth. KAN Development and TMM Group, with strong positive coefficients on revenue growth and more controlled responses to more vagaries, present value in pursuing strategic growth and cost management.

Furthermore, the coefficient of crisis coefficient shows that global disruption has an extremely ruinous effect on construction firms, thereby pushing the latter to develop a resilience to such crises. Lowly-levered and liquid companies, like ICM Group and Kharkiv Bud, appear to have seen the crisis more calmly.

Over the 2019-2023 period, a number of factors have influenced construction enterprises' financial performance in Ukraine, including the global economic challenges of the COVID-19 pandemic and the war. In the period under review the construction sector has experienced economic turbulence typified by rising inflation, volatile exchange rates and supply chain disruptions, which inevitably affect the construction sector. Results show that the role of revenue growth is important for the financial potential of these companies, and the global crisis has significantly reduced their performance (Figure 1).

Results show that revenue growth has been a key determinant of financial success for most companies including KAN Development and TMM Group that reveals significant positive relationships with this factor. These companies have managed to sustain or build up revenue, and to remain in stronger financial positions, despite the difficult economic environment. Yet the data also paints a dramatic view of the adverse effect the global crisis has had on the sector. The crisis coefficient indicates the degree that most firms were under financial strain as a result of the pandemic and associated disruptions, while the strongest firms were Kyivmiskbud and Budivelnyk, as they suffered the most from pandemic disruptions.

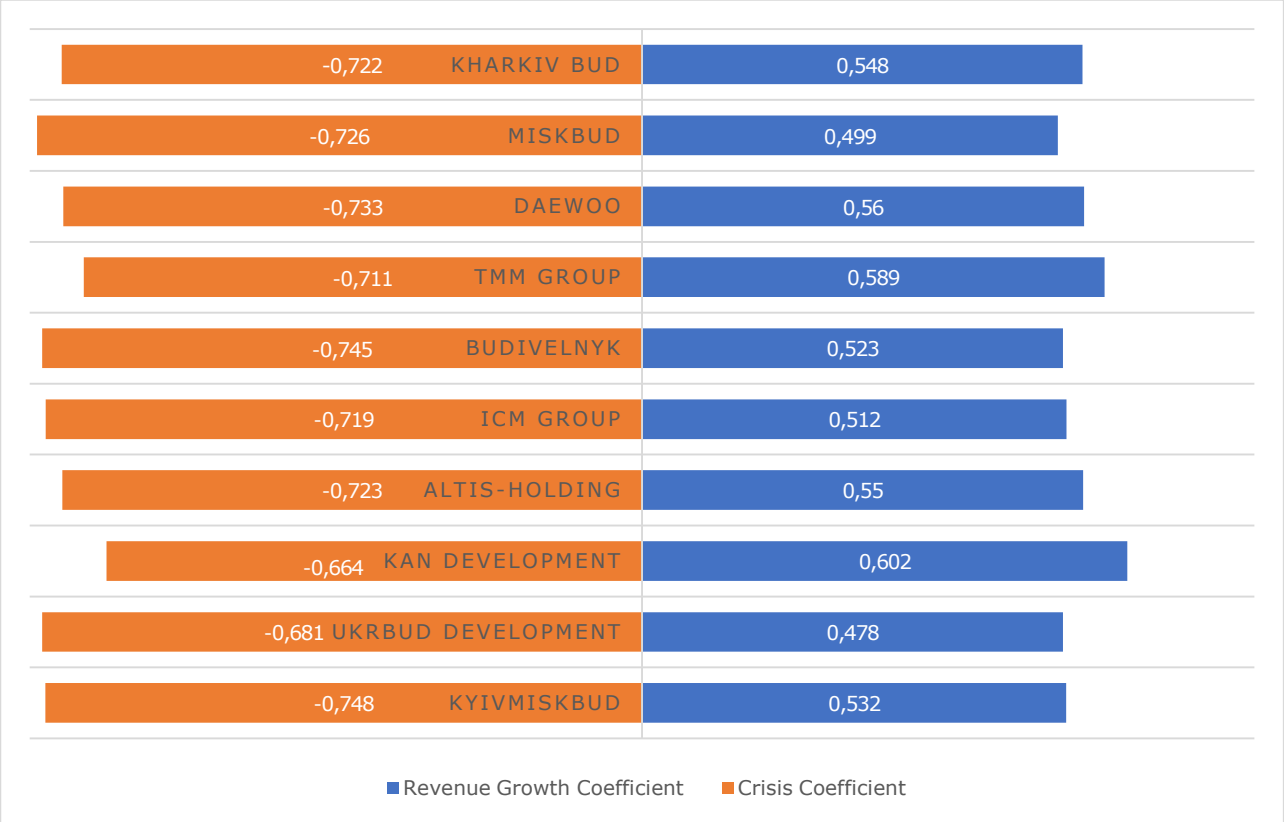

Figure 1. Revenue growth coefficient (positive values) and crisis coefficient (negative values) for each company

Source: developed by authors using data from (State Statistics Service of Ukraine, 2023a, 2023b).

These results highlight the construction enterprises' vulnerability to both external economic shocks and their internal financial management strategies. Though some companies, like KAN Development, did better at balancing revenue growth with the lessening some of the negative effects of the crisis, overall, the other companies fared poorly. However, firms, such as Kyivmiskbud, that suffered the largest losses during the crisis, might be forced to rethink their approach to strategic financial management, particularly in regard to revenue diversification and crisis preparedness. Thus, the construction companies who could achieve robust revenue growth while systematically managing the pandemic challenges, showed their financial potential more. Essential information from this analysis will help to develop better strategies for financial resilience and future economic disruptions in Ukrainian construction sector.

Finally, construction enterprises in Ukraine should deal with their financial potential in an integrated manner and reconcile macroeconomic risk threats from the outside with financial strategic decisions made from the inside. Construction companies can help boost their long-term sustainability and the greater stability of the Ukrainian economy by focusing on these areas.

Limitations

While this research provides valuable insights into managing the financial potential of construction enterprises in the face of modern economic challenges, it is important to acknowledge certain limitations that may affect the generalizability and scope of the findings. One limitation is the reliance on secondary data from publicly available financial reports and industry databases, which may not capture the most current or comprehensive information about the internal operations and strategic decisions of the selected construction companies. These data sources, though reliable, may also be affected by reporting biases or inconsistencies, limiting the accuracy of some of the financial metrics used in the econometric model.

Another limitation stems from the focus on only 10 construction companies in Ukraine, which may not fully represent the diversity of the entire construction industry in the country. The sample size is relatively small, and the findings may not be applicable to all sectors or regions within the Ukrainian construction market. Furthermore, while the econometric model provides a robust framework for assessing financial performance, it does not account for every potential factor influencing financial outcomes, such as changes in government regulations, global economic trends, or unquantifiable social factors.

Recommendations

This study contributes to the understanding of financial dynamics in construction enterprises that operate under difficult economic conditions, but it is limited by the above. Further studies should improve on the sample to include a larger number of companies from various parts of Ukraine, or perhaps comparative studies with other possibly disparate states dealing with analogous economic difficulties. It would thus help in developing a more complete picture of the relevant factors of financial performance in the construction industry.

Moreover, future research could involve primary data collection (e.g. surveys and interviews) from the managers and decision-makers in the construction companies by including surveys and interviews with managers and decision makers of construction companies so that a deeper understanding concerning strategies, risk management and human resource management for construction companies becomes available that enhance financial performance. This could be used to complement the secondary data used in this study and allow a broader angle on the factors that determine financial potential.

Consequently, a great deal of research is devoted to exploring the role of new emerging technologies, which include digital tools for project management, artificial intelligence, and Building information Modeling, in improving the financial performance of construction enterprises. However, these technologies are rapidly transforming the construction industry, and they hold promise for the potential to improve the financials for many construction projects in the areas of cost efficiency, risk management and sustainability. This means that incorporating technological innovations into future studies may offer a more forward-looking perspective of the financial potential of construction enterprises.

Conclusions

The study conducted is methodically comprehensive and has revealed financial dynamics of Ukrainian construction enterprises in terms of modern economic challenges, corresponding to goals and title of the research. Findings show that revenue growth plays a major role in the financial stability of construction firms, with the top performers including KAN Development and TMM Group, which exhibit the strongest relationship with this variable. On the contrary, with the onset of crisis period 2020–2021 the enterprises faced the strong financial constrains (negative, but statistically important crisis points coefficient) because they were not insured against crisis as the companies like Kyivmiskbud and Budivelnyk.

Using studies on comparative advantage in revenue diversification, the study conveys the importance of effective financial strategies such as revenue diversification and risk management as measures to curb external shocks. The companies which adapted to crisis conditions retaining their financial potential and competitiveness in the market were successful. From these insights, we learn of the strategic priorities needed for the construction sector to foster resilience and growth.

Future research should investigate how the economic crisis will affect the long-term investment activity and innovation adoption within the construction industry. Besides, studies having potential in the development of predictive financial models and incorporation of digital tools

with the purpose to improve the operational efficiency of the sector through its recovery and growth may prove of great help to the sector. These areas of investigation are important areas of investigation in that they equip construction enterprises with the tools to confront impending economic challenges.

Acknowledgements

None.

Conflict of interest

None.

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Особливості управління фінансовим потенціалом будівельних підприємств в умовах сучасних економічних викликів

Анотація. Ефективний сталий розвиток галузі залежить від фінансового потенціалу будівельних підприємств, особливо в умовах сучасних економічних викликів. Це дослідження є важливим і актуальним, оскільки для постановки проблеми необхідно визначити детермінанти фінансової діяльності українських будівельних компаній в умовах економічної нестабільності, геополітичної напруженості, війни та наслідків пандемії COVID-19. Мета дослідження – проаналізувати фінансовий потенціал 10 провідних українських будівельних підприємств за період 2019–2023 рр. та визначити основні фактори, що визначають їх стійкість та адаптивність до зовнішніх шоків. Дослідження ґрунтується на вторинних даних зі звітів компаній і використовує економетричну модель панельних даних для дослідження зв'язків між фінансовими показниками компанії, зростанням доходів та ефективністю витрат, її кризовими періодами та макроекономічними умовами. Методологія генерує надійні та відтворювані результати, а відповідність моделей фіксованих і випадкових ефектів перевіряється для специфікації. Результати свідчать про те, що зростання доходів є найважливішим фактором фінансової стабільності, за яким слідує ефективність витрат. Усі підприємства зазнали негативного впливу періоду кризи 2020–2021 років та війни із різним ступенем фінансової вразливості. KAN Development і TMM Group показали кращу адаптивність завдяки хорошим стратегіям управління фінансами порівняно з іншими компаніями. Дослідження має практичну цінність, використовуючи рекомендації щодо диверсифікованих доходів, управління витратами та кризових стратегій, засновані на доказах. Це критично важливе розуміння для політиків, інвесторів і бізнес-лідерів, які хочуть зробити будівельний сектор більш стійким і стійким

Ключові слова: фінансовий потенціал, економетричне моделювання, будівельні підприємства, ефективність витрат, доходи, економічна нестабільність, антикризові стратегії