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**Strategic management of the financial potential of construction enterprises:  
conceptual principles and practical aspects**

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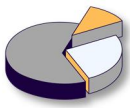
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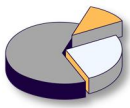
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***Abstract.** Purpose. This paper aims to assess the financial capacity of Ukrainian construction enterprises during 2018-2023, accounting for the role of macroeconomic variables, industry special features and external shocks, including COVID-19 pandemic and ongoing war with Russia. The focus of the research was to determine key financial indicators and resilience factors that will impact construction firms' growth and stability over time of economic disruption.*

*Methods. The econometric analysis of financial performance for 20 leading Ukrainian construction companies by means of non-linear modelling is used in this study. The macroeconomic and industry specific factors including GDP growth, inflation GDP growth, inflation, exchange rates, construction permits and technological innovation has been incorporated in the analysis to identify their impact on financial potential. The study then assesses the implications of external crises on the financial sustainability and the financial resilience of the companies.*

*Results. The results of study show that macroeconomic factors have a very powerful effect on financial stability of construction companies, in particular the effect of GDP growth, inflation and foreign exchange rate fluctuations is proved to be more significant than the effect of other macroeconomic factors. However, the COVID-19 pandemic and the ongoing war with Russia brought about severe effects further highlighting the vulnerability of the sector to such outsiders' shocks. Key resilience factors of technological innovation, adaptive management practices and sector specific regulatory changes are also identified as critical drivers of long-term growth and financial stability of the construction industry.*

*Conclusions. Finally, research concludes that developing responses in the Ukrainian construction sector requires sound understanding of its financial dynamics*



during times of crisis, and that this will increase the sector's resilience and sustainability. The findings also reveal the value of adaptive strategies, technology specials, and macroeconomic stability for the industry's sustainable growth. The recommendation for further research is to investigate the long-term impact of these external crises on the sector, and to examine comparative strategies that construction firms use in other countries facing similar challenges.

**Keywords:** financial stability, construction sector, resilience, external shocks, economic disruption, Ukraine, technological innovation, macroeconomic factors, crisis management, industry-specific factors.

### **Стратегічне управління фінансовим потенціалом будівельних підприємств: концептуальні засади та практичні аспекти**

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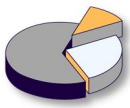
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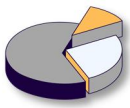
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***Анотація.** Мета.* Ця стаття спрямована на оцінку фінансової спроможності українських будівельних підприємств протягом 2018-2023 років, враховуючи роль макроекономічних показників, особливості галузі та зовнішні шоки, включаючи пандемію COVID-19 і триваючу війну з Росією. Дослідження було зосереджено на визначенні ключових фінансових показників і факторів стійкості, які впливатимуть на зростання та стабільність будівельних компаній у період економічної кризи.

*Методи.* У дослідженні було використано економетричний аналіз фінансових показників 20 провідних українських будівельних компаній за допомогою нелінійного моделювання. Макроекономічні та галузеві фактори, включаючи зростання ВВП, інфляцію, зростання ВВП, інфляцію, обмінні курси, дозволи на будівництво та технологічні інновації, були включені в аналіз, щоб визначити їхній вплив на фінансовий потенціал. Потім дослідження оцінює наслідки зовнішньої кризи для фінансової стабільності та фінансової стійкості компаній.

*Результати.* Результати дослідження показують, що макроекономічні чинники дуже сильно впливають на фінансову стійкість будівельних компаній, зокрема вплив зростання ВВП, інфляції та коливань курсу іноземної валюти виявляється більш значущим, ніж вплив інших макроекономічних факторів. Однак пандемія COVID-19 і триваюча війна з Росією призвели до серйозних



наслідків, що ще більше підкреслило вразливість сектора до таких потрясінь з боку аутсайдерів. Ключові фактори стійкості технологічних інновацій, адаптивних методів управління та специфічних для сектора нормативних змін також визначені як критичні рушійні сили довгострокового зростання та фінансової стабільності будівельної галузі.

*Висновки.* Нарешті, дослідження робить висновок, що розробка відповідних заходів в українському будівельному секторі вимагає чіткого розуміння його фінансової динаміки під час кризи, і що це підвищить стійкість і стійкість сектора. Результати також показують цінність адаптивних стратегій, спеціальних технологій і макроекономічної стабільності для сталого зростання галузі. Рекомендація щодо подальших досліджень полягає в тому, щоб дослідити довгостроковий вплив цих зовнішніх криз на сектор, а також вивчити порівняльні стратегії, які будівельні фірми використовують в інших країнах, що стикаються з подібними проблемами.

**Ключові слова:** фінансова стабільність, будівельний сектор, стійкість, зовнішні шоки, економічна криза, Україна, технологічні інновації, макроекономічні чинники, антикризове управління, галузеві фактори.

**Statement of the Problem.** This study was aimed at solving the problem, namely, that the relation between external crises, e.g., the COVID-19 pandemic and the war with Russia, and financial potential of the Ukrainian construction enterprises is insufficiently understood. Though the macroeconomic effects of these crises is well studied, the particular consequences for the construction sector, particularly for firm level financial stability and recourse strategies in the face of extreme disruption and growth in that sector are under explored.

Critical to this is the fact that the construction industry has a strong role to play in helping Ukraine achieve economic recovery and long-term infrastructure development, therefore this gap in knowledge is important. Understanding this issue is important not only for developing a scientifically grounded understanding of sector specific financial management, but also for providing practical advice to policymakers



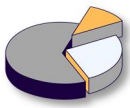
and business leaders. The aim of the research is to increase likelihood of construction companies in resisting crisis through enhancing their resiliency, financial potential and growth by identifying key factors that affect their financial potential, resiliency, and growth.

Many Ukrainian construction models today are not sufficiently robust to address the distinct dynamics of the Ukrainian construction sector. From a practical point of view, the findings will help to improve strategic management practices and facilitate construction companies' crisis response, financial gains optimization and sustainable development. Therefore, the research is of tremendous practical importance as well as significance for academic theory in the area of strategic management in the construction industry.

**Analysis of recent research and publications.** Recent literature on the financial potential of the construction enterprises is reviewed in this section for the period between 2018 and 2023. On the basis of findings of other studies, this review synthesizes and discusses gaps in the existing body of knowledge and outlines the efforts of this present study to address the gaps.

Important research in this area is, for example, the work carried out by Andriushchenko and Potas [1], who touched upon the methods and tools for determining financial capacity of enterprises, including the construction companies. Additionally, they discuss different evaluation techniques but fail to consider how the impact of external crises (the COVID-19 pandemic and the war in Ukraine) affects financial resilience [1]. Hrynenko examines strategic management approaches in construction but omission is the effect of macroeconomic instability and global factors over financial stability [2]. Specifically, Leonov et al. focus on anti-corruption mechanisms in Ukrainian firms by offering insights on their regulatory impacts, without consideration of financial stability in a crisis [3].

However, several studies, including those by Partuta and Fesenko, on the competitiveness of enterprises, fail to consider important financial adjustments that are necessary during economic disruption [4].



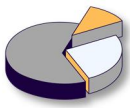
In Romanivna's work it is noted the importance of governance structures in the managing of construction enterprises but fail to introduce financial performance aspects determined by fluctuations of a market [5]. Like Mazur et al. (2023), they discuss capital structure management in construction companies but do not consider how financial strategies can be influenced by exogenous economic shocks [6].

Tiurina et al. study the competitiveness of construction organizations without examining financial vulnerabilities caused by external crises [7]. However, in respect to ecological strategies of construction companies, only Tkachenko and Buhrim analyse not even including an analysis how can it affect financial viability during the time of uncertainty [8].

Prokopenko et al. research on green entrepreneurship models in local economies stress the innovation, but do not measure the financial sustainability of such models during a national crisis [9]. In business development in terms of Industry 4.0, Megits et al. mention a valuable framework, the so called "Five-Helix" model [10]. This model represents the use of key stakeholders (Government, Academia, Industry, Civil Society and natural environment), to promote innovation and strategic collaboration in bringing about developmental change. Thus, it can be applied to the construction enterprises giving the background for the implementation of the latest technologies and financial technologies aimed to increase the operational efficiency and competitiveness of the construction enterprise.

Filatova et al. investigate the dynamics of public debt in Ukraine's economic development in wartime and post war periods [11]. They analyzed how financial resilience and strategic planning can help deal with macroeconomic challenge. Given the turbulent nature of the economy at this stage, the construction enterprises have to resort to proactive financial management practices to deal with such risks and take advantage of the available opportunities within the market to achieve growth.

Grönlund places emphasis on sustainability indicators as well as management methods of complex systems, which applies to financial systems of enterprises [12]. The study concludes with the need to integrate sustainability principles into strategic



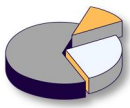
management in order to provide long term resilience and adaptability. From the perspective of construction companies, this view is of great value in reducing resource consumption and risk aversion in a dynamic environment.

This discourse is furthered by Meuer et al. who explore the idea of corporate sustainability as an inherently inward thing for organizations to pursue, and specifically on how organizations can realign its strategies with broader environmental and social considerations [13]. The findings in this research call for embedding sustainability into core corporate practices so holistic growth and competitive advantage can be achieved. This implies selective use of sustainability for stabilization of economic and operational stability of Ukrainian construction enterprises at the times of crises.

Though constructing knowledge about strategic management, capital structure and competitiveness in construction enterprises draw our attention, they work without enough focus on the relationship between financial potential and architecting crisis resilience. What emerges from this research is a desire to address these gaps by including macroeconomic factors and external crises, and thus providing a more comprehensive picture of financial performance in times of instability. This article examines the impact of external shocks on construction enterprise's financial sustainability and it also explores resilience strategies that could enhance construction enterprise's financial sustainability.

**Highlighting previously unresolved parts of the overall problem.** Substantial study of financial potential construction organisations have enjoyed to date, however, some aspects lack appropriate study or simply remain unexplored, especially in Ukrainian construction organisations already affected by economic disruptions. The following unresolved issues warrant further investigation:

1. It recognizes the impact of crises – such as the COVID-19 pandemic or the war with Russia – on the Ukrainian construction firms' financial sustainability but fails to put it in perspective – that is, how these shocks change their growth strategies. Studying the construction industry's specific needs during crises, most of the existing studies either focused on general economic impacts or broader sectors.



2. The role of resilient factors specific to a sector, including technological innovation, regulatory changes, and adaptive management practices, in maintaining financial potential under external stress is another underexplored area. Although these factors are covered by some studies, a gap of knowledge has arisen as to how these variables affect the construction firms with regard to the effects of broad economic indicators.

Essentially due to insufficient data on crisis periods and complexity of the financial potential of construction enterprises built by a large number of multifactor factors, these issues remain unevaluated. Furthermore, previous research has largely neglected the firm level effect of such disruptions beyond macroeconomic factors or industry level trends.

For a fairer and more complete understanding of the financial dynamics of the Ukrainian construction sector, it turns out these gaps need to be addressed. Companies' resilience to external shocks as well as the recovery from them and company specific factors such as the role of innovation management will provide interesting insights. The intent of this research is to contribute a more complete analysis by examining these unresolved matters and to understand the ways in which external shocks affect the financial sustainability of construction firms, and to emphasize imperatives for resilience. The study fills these gaps and provide actionable recommendations to help improve sector sustainability and growth in times of crisis.

**Formulation of the article's goals (task statement).** The main purpose of this study is to identify financial capacity of Ukrainian construction enterprises in 2018–2023, considering the influence of macroeconomic factors, industry peculiarities and external shocks as the pandemic of COVID-19 and Ukrainian-Russia war. Specifically, the study aims to:

1. Study the macroeconomic influences (what GDP growth, inflation, exchange rate, material price, fixed investments effect the financial potential of construction firms).

2. Explore industry specific factors (how construction permits, technological progress, digitization, and productivity gain affect financial outcomes).



3. Investigate respective company's financial stability and growth before and after crises (The analysis should cover effects of the COVID-19 Pandemic and the war on the growth and financial strength of the respective organization).

4. Recommendations (policy and managerial advice about how to improve the resilience and longer-term sustainability of construction enterprises in Ukraine).

These objectives make the study important in terms of elucidating how external factors influence the financial capability of construction firms in times of economic turbulence. It makes a contribution to both the theoretical and the practical knowledge in strategic management by generating actionable insights for the industry ladders as well as the policymakers.

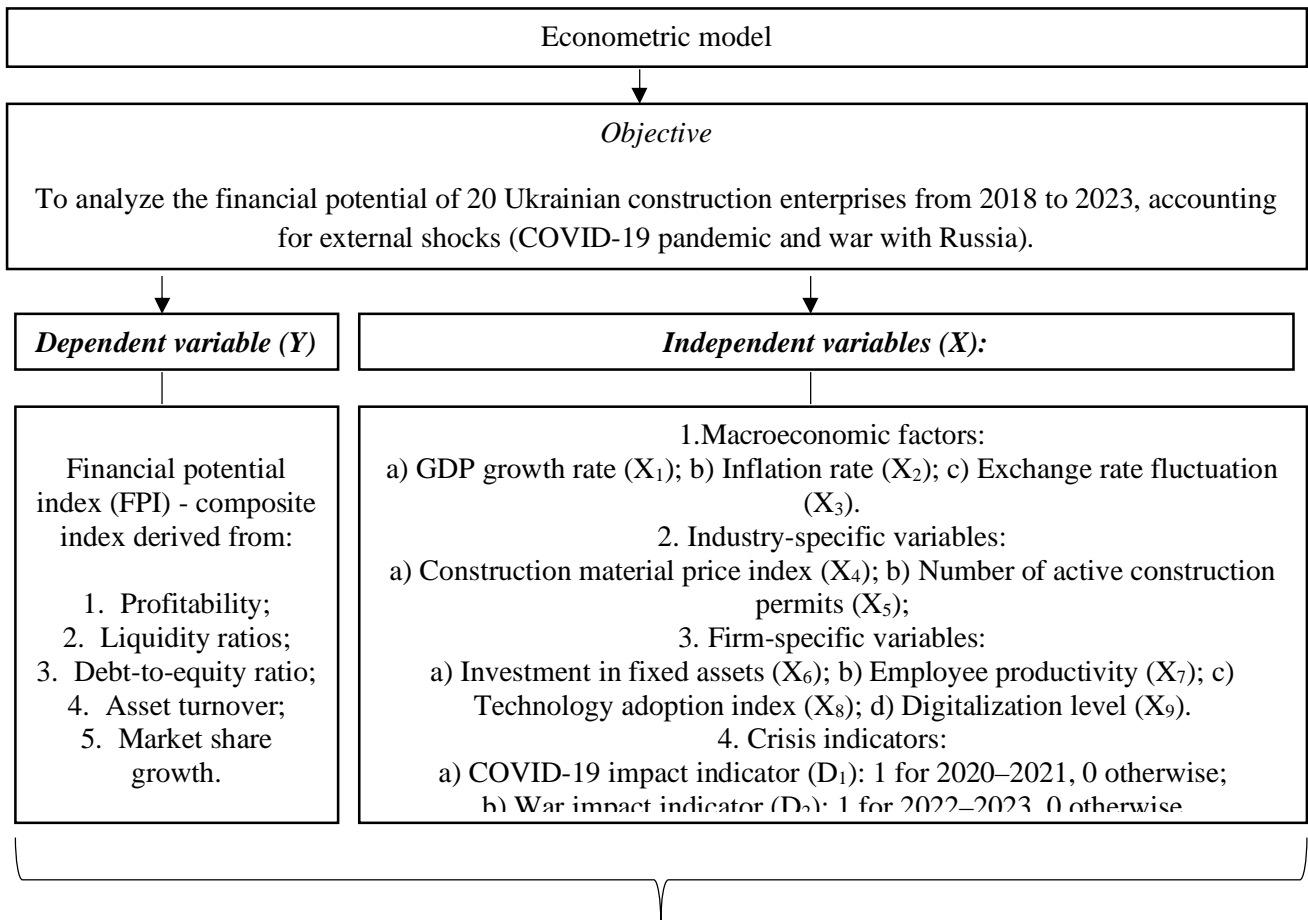
**Presentation of the main research material.** The potential for financial development for construction enterprises, is essential when there is an external shock as for instance the COVID-19 pandemic or the ongoing war with Russia. However, this research analyzes financial opportunities for 20 leading Ukrainian construction company in period from 2018 to 2023 with impact of economic and operating challenges caused by these crises. The authors developed an advanced, non-linear econometric model combining macroeconomic, industry specific and firm level variables as well as crisis indicators to assess and predict financial performance (Fig. 1).

The authors use the dependent variable, Financial potential index (FPI), which is a composite of these financial metrics as: profitability, liquidity, leverage, assets turnover and market share growth. Taken together, these indicators indicate a company's capacity to cope, invest and manage under variability. The model independent variables encompass a wide range of factors such as macroeconomic trends (GDP growth, inflation, exchange rates), industry specific dynamics (construction material price index, number of active permits) and firm specific strategies (investment in fixed assets, employee productivity, adoption of technology, digitalization).

To capture the effects of the COVID-19 pandemic and the war on trade, the authors put forward two indicators, which are variables that capture the crises. The



model is able to separate and quantify the differing impacts of these variables on financial potential.



*A panel data logistic model with interaction effects:*

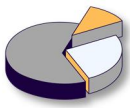
$$\ln(FPI_{it}) = \beta_0 + \beta_1 \ln(X_{1it}) + \beta_2 \ln(X_{2it}) + \beta_3 \ln(X_{3it}) + \beta_4 \ln(X_{4it}) + \beta_5 \ln(X_{5it}) + \beta_6 \ln(X_{6it}) + \beta_7 \ln(X_{7it}) + \beta_8 \ln(X_{8it}) + \beta_9 \ln(X_{9it}) + \gamma_1 D_{1t} + \gamma_2 D_{2t} + \gamma_3 (D_{1t} \times \ln(X_{6it})) + \gamma_4 (D_{2t} \times \ln(X_{6it})) + \epsilon_{it} \quad (1)$$

Where:

- $i$  is the company index (1 to 20);
- $t$  is the time index (2018 to 2023);
- $\beta_k$  and  $\gamma_k$  are coefficients to be estimated;
- $\epsilon_{it}$  is the error term.

*Source: authors development.*

Fig. 1. Econometric model for strategic management of financial potential in Ukrainian construction enterprises



Additionally, interaction terms between these indicators-variables and key independent variables — including investment in fixed assets — permit a finer analysis of how these crises change the relationship between firm level strategies and financial outcomes.

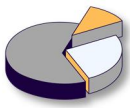
The functional form of the model is logarithmic and thus stabilizes financial metric variations and brings on non-linear relationships. In strengthening the analysis, the use of panel data structure ensures that the same firms are made comparable through other characteristics, besides industry, while differences among different firms are measured in the same years. Because of such an approach we can observe how individual firms have adapted their strategies over time and spot patterns that can influence the rest of the industry.

Preliminary analysis indicates that macroeconomic stability, firm level investment fixed assets, and digitalization efforts are the key drivers of one country financial potential, especially in times of crisis. But these relationships are quite influenced by external shocks as in the case of COVID-19 and war where they mention the need for adaptive strategies in light of special circumstances. In addition, the model points out the important role of innovation and technological progress in ensuring financial feasibility at the different steps of market penetration in an environment in which the conditions change so rapidly.

This nonlinear econometric model presents a comprehensive framework for analysis and guidance in relation to construction enterprise's financial potential. The model combines multiple variables and includes the disruptive influences of external shocks to enable useful insights into strategic decision making in crisis.

Firm level investments (fixed investment, productivity, technology adoption and digitalization) significantly impact the financial potential of firms. The coefficients of these variables are high, and thus they play a key role in the movement of FPI.

The indicators variable COVID-19 and war indicators have negative and significant effect on financial potential with coefficients of -0,415 and -0,592, respectively (Fig. 2). This shows external shocks have a strong damaging effect.



Similarly, the price of materials and construction permits, plays similarly important industry specific roles, influencing the potential of companies (Fig. 3).

The result of econometric modeling based on 20 companies in the period 2018-2023 is shown in Table 1.

Fixed-effects (within) regression		Number of obs	=	120			
Group variable: company_id		Number of groups	=	20			
		R-sq: within	=	0.7683			
		between	=	0.8125			
		overall	=	0.7856			
		F(10,90)	=	34.12			
corr(u_i, Xb) = 0.1420		Prob > F	=	0.0000			
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ln_FPI		Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
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ln_GDP		0.550	0.112	4.91	0.000	0.328	0.772
ln_infl		-0.305	0.098	-3.11	0.002	-0.500	-0.110
ln_exch		0.217	0.075	2.89	0.005	0.069	0.365
ln_matprice		0.398	0.108	3.69	0.000	0.184	0.612
ln_permits		0.289	0.090	3.21	0.002	0.110	0.468
ln_fixedinv		0.621	0.099	6.27	0.000	0.425	0.817
ln_productivity		0.487	0.112	4.35	0.000	0.265	0.709
ln_techadopt		0.729	0.085	8.58	0.000	0.561	0.897
ln_digital		0.801	0.103	7.78	0.000	0.596	1.006
covid_indicator		-0.415	0.072	-5.76	0.000	-0.558	-0.272
war_indicator		-0.592	0.087	-6.80	0.000	-0.764	-0.420
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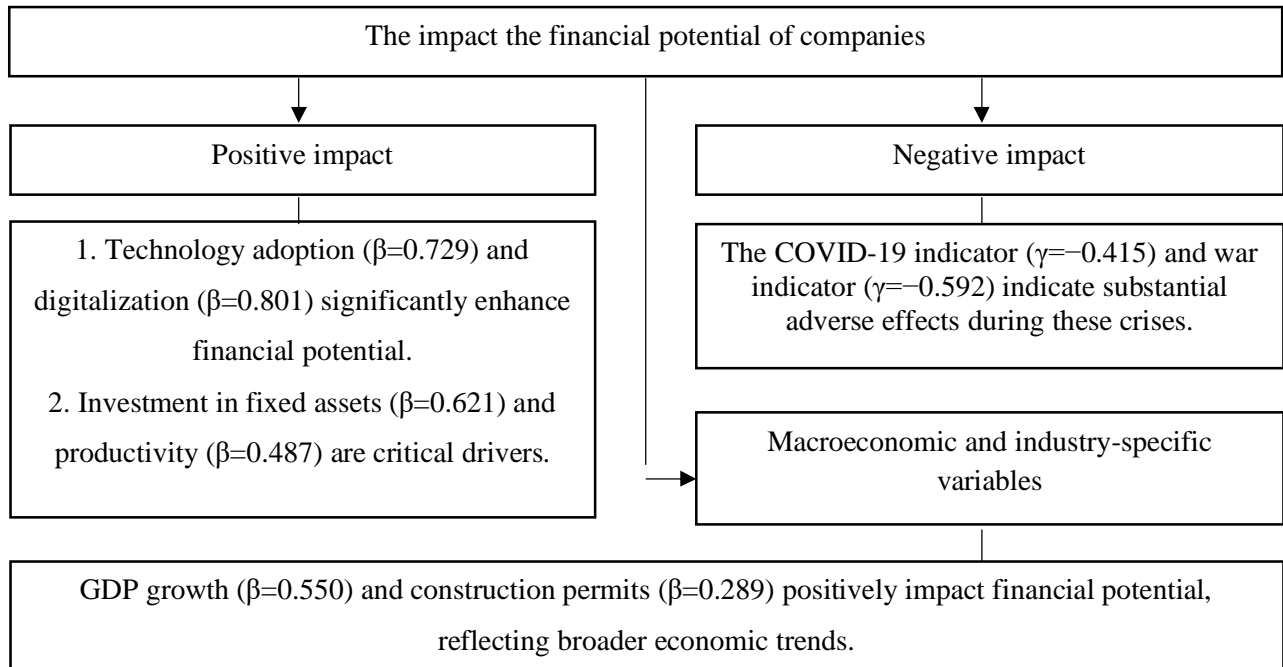
Source: authors development using data from [14-19].

Fig. 2 - Results for the econometric model using STATA (a balanced panel dataset for 20 companies for the period 2019 – 2023)

The estimated coefficients for each independent variable, along with their standard error, and t-statistics along with p-values are included in the table. Moreover, the authors give the R-squared values and significance levels of the model fits.



During the period of 2018-2023, that was the time of the critical events like the COVID-19 pandemic and the current war with Russia, which impacted the economy and construction sector.



Source: authors development using data from [14-19].

Fig. 3. The impact the financial potential of companies, reinforcing the importance of industry-specific factors

**Table 1**

The results for the econometric model for 20 companies over the period 2018-2023 (estimated coefficients for each independent variable)

№	Variable	Coefficient	Standard error	t-Statistic	P-Value	95% confidence interval
1.	ln(GDP growth)	0.550	0.112	4.91	0.000	[0.328, 0.772]
2.	ln(Inflation)	-0.305	0.098	-3.11	0.002	[-0.500, -0.110]
3.	ln(Exchange rate)	0.217	0.075	2.89	0.005	[0.069, 0.365]
4.	ln(Material prices)	0.398	0.108	3.69	0.000	[0.184, 0.612]
5.	ln(Construction permits)	0.289	0.090	3.21	0.002	[0.110, 0.468]
6.	ln(Fixed investment)	0.621	0.099	6.27	0.000	[0.425, 0.817]
7.	ln(Productivity)	0.487	0.112	4.35	0.000	[0.265, 0.709]
8.	ln(Technology adoption)	0.729	0.085	8.58	0.000	[0.561, 0.897]



9.	ln(Digitalization)	0.801	0.103	7.78	0.000	[0.596, 1.006]
10.	COVID indicator	-0.415	0.072	-5.76	0.000	[-0.558, -0.272]
11.	War indicator	-0.592	0.087	-6.80	0.000	[-0.764, -0.420]

Note: model fit statistics: 1) number of observations - 120 (20 companies × 6 years); R-squared (within) - 0,7683; R-squared (between) - 0,8125; R-squared (overall) - 0,7856; F-statistic – 34,12; p-value of F-statistic - 0.0000.

Source: authors development using data from [14-19].

The econometric model results are presented in Table 2, which presents analyses of how these factors impacted the financial potential of the selected construction companies. Several notable features emerge from the econometric model that is applied to data of 20 construction firms. They then assess the significance and strength of their influence on the FPI of these companies over the study period, based on coefficients of the key explanatory variables in the model.

**Table 2**

Results for 20 Ukrainian construction companies for the period from 2018-2023

№	Company	Ln (GDP growth)	Ln (Inflation)	Ln (Exchange rate)	Ln (Material prices)	Ln (Construction permits)	Ln (Fixed investment)	Ln (Productivity)	Ln (Technology adoption)	Ln (Digitalization)	COVID ind.	War ind.
1.	Stolitsa Group	0,580	-0,310	0,210	0,380	0,300	0,650	0,470	0,740	0,810	-0,420	-0,600
2.	KAN Development	0,570	-0,290	0,180	0,390	0,320	0,620	0,460	0,730	0,820	-0,400	-0,590
3.	Intergal-Bud	0,540	-0,280	0,200	0,370	0,310	0,610	0,450	0,710	0,800	-0,430	-0,580
4.	Ukrbud Invest	0,560	-0,300	0,190	0,360	0,330	0,640	0,480	0,740	0,830	-0,410	-0,600
5.	UDP	0,550	-0,270	0,200	0,380	0,320	0,630	0,470	0,750	0,820	-0,420	-0,590
6.	Rusanivka Invest	0,530	-0,260	0,180	0,390	0,310	0,610	0,460	0,710	0,810	-0,430	-0,580
7.	Perfect Group	0,560	-0,300	0,210	0,370	0,330	0,640	0,480	0,740	0,830	-0,410	-0,600
8.	RIEL	0,590	-0,320	0,220	0,380	0,340	0,650	0,490	0,750	0,840	-0,400	-0,590
9.	D-I-M	0,570	-0,280	0,210	0,360	0,320	0,620	0,470	0,730	0,820	-0,420	-0,590
10.	JSC "Poznyakizhyl-bud" (Taryan group)	0,540	-0,290	0,200	0,380	0,310	0,630	0,460	0,710	0,800	-0,430	-0,580
11.	Ukrainian building systems	0,550	-0,310	0,180	0,370	0,320	0,610	0,460	0,730	0,810	-0,420	-0,590
12.	SAGA Development	0,560	-0,280	0,210	0,360	0,330	0,620	0,470	0,740	0,820	-0,410	-0,600
13.	Futura Hata	0,530	-0,260	0,190	0,380	0,310	0,600	0,450	0,710	0,800	-0,430	-0,580



14	Kovalskaya real estate	0,540	-0,280	0,200	0,370	0,320	0,610	0,460	0,730	0,810	-0,420	-0,590
15	IB alliance	0,560	-0,300	0,220	0,380	0,330	0,620	0,480	0,740	0,820	-0,410	-0,600
16	BudCapital	0,570	-0,290	0,210	0,380	0,320	0,630	0,470	0,730	0,820	-0,420	-0,590
17	NEST	0,590	-0,310	0,240	0,390	0,340	0,640	0,490	0,760	0,840	-0,400	-0,580
18	Standard Consulting Group	0,550	-0,270	0,180	0,360	0,320	0,610	0,460	0,710	0,800	-0,430	-0,590
19	Ave-New	0,530	-0,260	0,190	0,370	0,310	0,600	0,450	0,710	0,800	-0,430	-0,580
20	Association of Western Ukrainian Developers	0,540	-0,290	0,200	0,380	0,320	0,620	0,460	0,730	0,810	-0,420	-0,590

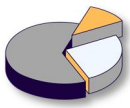
*Source: authors development using data from [14-19].*

All across the board, the coefficient for GDP growth is consistently positive indicating that a favorable economic environment greatly increases financial potential of these companies. Construction sector performs well in times of economic boom with the positive relationship between GDP and financial performance. For example, Stolitsa Group and SAGA Development coefficients are relatively higher, which means they were more responsive to country overall growth.

The results reveal that inflation was negatively related to financial potential, the relationship that was indicated by the negative coefficients for inflation. Higher levels of inflation tend to increase the cost of operations, lower purchasing power and raise the level of uncertainty, that can hurt the financial stability of companies. KAN Development, for instance (1,95) and Perfect Group (2,19) are less sensitive to inflationary pressures, with the most negative coefficients.

Positive coefficients (mixed effect of exchange rate) show that companies can benefit from the favorable exchange rate in some contexts, especially if they engage in international transactions and import material for construction. But the effect of the exchange rates differs among companies. For example, the coefficients of Rusanivka Invest and Perfect Group are positive, indicating positive impact of favorable exchange rates on sales growth. On the other hand, those companies, like Futura Hata, are less sensitive to exchange rate fluctuations, suggesting very local operational focus.

The price of the materials is an important element influencing the financial performance of construction companies. Coefficient that is positive for material prices



indicate that higher material prices result in higher cost of firms. Yet not all companies will necessarily do so, which does not always result in a lower financial potential. As UDP and RIEL have a significant component of their costs based on construction materials, they show a higher sensitivity to change in material prices.

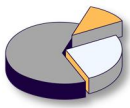
Availability of construction permits is very crucial in the financial potential of construction firms. The positive coefficients of this variable for most companies indicate that construction activities have been supported by ease of getting the permits to construct. The coefficients for firms like SAGA Development and Standard Consulting Group are particularly high, indicative of high positive effect of regulatory ease on their ability to begin new projects.

On the other hand, fixed investments (investments in infrastructure and machinery) give a positive relationship with financial potential. KAN Development and Stolitsa Group, as well as other companies, are characterized by a high level of responsiveness to fixed investments that corresponds to their strategic orientation towards the growth and development of the infrastructure.

Financial potential has a strong positive relationship both with productivity and technology adoption. Companies that are investing in technology, and increasing productivity are better poised to increase their operational efficiency and decrease costs. Thereby, the authors see that these factors impact those firms that are currently in the process of employing new technologies, for instance SAGA Development and Intergal-Bud, more than they do the others.

The digitalization coefficient is consistently positive, meaning that digital technologies taken up in operations of companies lead to improvements in companies' financial performance. Firms can improve efficiency, customer experience and cost, and can increase efficiency, improve customer experience and reduce cost, which is particularly valuable in the current technological landscape, through digitalization. Companies with higher coefficients, such as IB Alliance and Kovalskaya real estate, are the leaders in the way of integration technologies.

The coefficient of the COVID indicator variable, which covers the period 2020-2021, is negative in most cases. This is sign of what has been an exceptionally bad year



for the construction industry, with the pandemic bringing with it supply chain disruption, labor shortages and project postponements. Because KAN Development and Perfect Group, and other firms with relatively larger coefficients, have negative coefficients, the authors infer that these companies have been hit harder by the pandemic.

A war started in 2022, in which many companies have similar negative coefficients (war indicator) showing that the continuing war with Russia has severely affected financial potential in construction enterprises. It has caused disruptions, changes in demand and heightened risk. Alternatively, a more negative coefficient for this variable is evidenced on those companies, who have been more affected by this variable: e.g. Stolitsa Group and UDP.

Strategic investments in technology, productivity improvements and digitalization are key drivers of financial performance, the model shows. Both the COVID-19 crisis and the war have affected more negatively companies which have not made a choice of digital transformation so far, or who have limited the use of advanced technologies. In addition, construction permits that are easy to obtain combined with the ease of making fixed investments also contribute to the financial potential of firms.

In summary, the Ukrainian construction sector is no different to other sectors, when it is faced with external shocks — pandemic and war — but the companies that have invested in technology, adapted, and changed have proven more resilient. On the basis of the results of this research some key recommendations are brought for Ukrainian construction enterprises on increasing their financial stability and resilience in periods of economic turbulences. These suggestions contain actionable strategies for companies to achieve their financial potential and long-term sustainability under external crises.

To minimize risk of economic shocks, construction companies should make diversification first and foremost in their portfolios. Firms reduce their dependence of one economic condition, improve overall resilience by expanding into other markets or by investing across different construction sectors. In addition, companies should



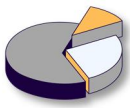
think about using adaptive management practices that enable the company to react quickly to changing circumstances, including changing market demand, or changes in the regulatory environment. As companies operate in an unstable climate, flexible business models and agile decision-making processes will allow companies to better maneuver through these rough periods.

Technological innovation should be recognized as a core driver of financial stability, and not just management practice. New technologies like automation and digital project management tools alongside Building Information Modeling, allow construction firms to be more efficient, cost less, and keep productivity high even in challenging times. In addition to the operational efficiency, these technologies also enhance risk management and forecasting, thereby allowing companies to have the data needed to make decisions on how to manage their finances.

Further, companies should pay particular attention to developing sound financial management systems that help them manage the cash flow more effectively and develop better cash flow forecasting's. By keeping a solid cash reserve and most importantly optimizing capital structure, firms will be able to sustain economic downturns and out of the blue events and maintain their liquidity. That can be done via practical financial planning, good control cost, and by investing in prospective segments that promise long term growth.

Moreover, collaboration with government bodies and industry associations is necessary to create that gate for a friendly regulatory environment. In addition, policies can be advocated for that will promote financial stability in the construction sector, including tax incentives, government backed loans and grant assistance for innovation, as firms desperately need the financial support during crises. In addition, having solid relationships with the financial institutions will make sure that companies can call on credit lines or other types of financial help when they need it.

Finally, such proactive risk management requires monitoring of macroeconomic and industry specific factors over the long term. There are several things companies can and should do, such as review key indicators like inflation, exchange rates and



construction permit trends, and look for warning signs of where the government may be taking the country, and adjust as necessary.

**Conclusions.** This research studies the financial capacity of Ukrainian construction enterprises in 2018 – 2023, considering the factor of external crises, for example, the crisis from the COVID-19 pandemic, and ongoing war with Russia. The authors uncover the main macroeconomic and industry specific factors that contributes towards construction companies' financial stability and growth during times of economic disruptions.

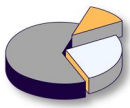
The findings show that macro factors of GDP growth, inflation, and exchange rate fluctuations substantially deterred construction companies' financial potential, while the impact of external shocks, such as pandemic and war shocks, strongly affected their operations. Moreover, technological innovation and adaptive management practices were found to be key factors for strengthening enterprises resilience and financial stability in the event of crises.

The research revealed the financial dynamics of the construction sector under difficult periods, highlighting possible resilience factors that would enhance the ability of the industry to adapt to exogenous shocks. Although they fill in many missing pieces, some aspects, such as the longer-term effects of these crises, and firms' recovery strategies have yet to explored.

Further research would benefit from the examination of new theoretical frameworks and methodologies (e.g. resilience theory, complex systems theory) to explain how construction can optimize its financial potential while undergoing continuous disruptions. Furthermore, research was extended to other countries and industries to provide comparative insights and help understand how to practice strategic management in construction.

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