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Address for contacts:
Lviv Polytechnic National University
79013, 12 Stepan Bandera Str., Lviv, Ukraine
E-mail: info@eem.com.ua
https://eem.com.ua/en

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Lilis Maryanti*
Master
Universitas Widyatama
40125, 204A Cikutra Str., Bandung, Indonesia
https://orcid.org/0009-0003-2847-5630

Andhika Hardika
Master
Universitas Widyatama
40125, 204A Cikutra Str., Bandung, Indonesia
https://orcid.org/0000-0002-3502-4518

Suji Saleh
Master
Universitas Widyatama
40125, 204A Cikutra Str., Bandung, Indonesia
https://orcid.org/0009-0003-0690-4588

Evaluated effect of financial performance on firm value: An empirical study of trade sector companies listed on the Indonesia stock exchange (IDX) during the 2021-2023 period

Abstract. The relevance of the study was based on the increasing need to understand how key financial indicators influenced investor perceptions and market valuation of companies under dynamic economic conditions. The purpose of the study was to determine the contributions of profitability, liquidity, and leverage to firm value in trading sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021-2023 period. This study used panel data regression with EViews 13.0 and a causal descriptive design to analyse 55 trading companies (2021-2023) selected via purposive sampling; applying hypothesis testing and the Random Effect Model (REM). It was shown through the research that both profitability and liquidity exert a significantly positive influence on firm value. Typically, improvements in these indicators lead to an increase in the company's value, whereas declines may result in a reduction. On the other hand, leverage was found to have no statistically significant effect on firm value, suggesting that variations in debt levels do not necessarily correspond to changes in the company's market valuation. Specifically, every 1% increase in Return on Equity (ROE) raises the Price to Book Value (PBV) by 0.009 units, while a one-unit increase in the Current Ratio (CR) increases PBV by 0.360. Conversely, the Debt-to-Equity Ratio (DER) has a minimal negative coefficient of -0.0000823, but this effect was not significant in the model. This study provided practical insights for enhancing firm value through improved profitability, liquidity, financial governance, and comprehensive financial analysis beyond leverage

Keywords: price to book value; return on equity; current ratio; debt to equity ratio; leverage

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*Corresponding author

INTRODUCTION

The relevance of the study was conditioned by the volatility in valuing newly listed companies on the Indonesia Stock Exchange, where financial performance often failed to align with market outcomes. Given inconsistent trends in profitability, liquidity, and leverage as predictors of firm value, clarifying their true impact under shifting economic conditions and investor behaviour became essential. The mixed findings in prior research underscored the need for updated, data-driven insights into how these factors affect firm value in the Indonesian trading sector.

In assessing financial performance, various factors have been shown to influence firm value, as highlighted in numerous studies. A.D. Rosihana (2023) found that profitability has a significant positive effect, with firm value rising along with higher profitability in consumer non-cyclicals companies during 2019-2021. The study conducted by H.F. Anni'Mah *et al.* (2021) found that profitability has a positive, significant impact on firm value. Higher profits can provide more earnings for dividends, attract investors, and can boost share prices and firm value; M. Jihadi *et al.* (2021) the test results show that profitability has a significant and positive effect on firm value. High profits attract investor interest to invest their capital, which, in turn, leads to an increase in the firm's value; C. Iman *et al.* (2021) stated that profitability shows a company's ability to use working capital to generate profits, repay debts, and distribute dividends to investors; F. Fanisa *et al.* (2020) noted that rising profitability signals better prospects for a company. However, sustaining this growth requires efficient cost management, avoiding excessive spending on product development or acquisitions that could increase future expenses.

Meanwhile, research conducted by R.D. Putra & R. Gantino (2021) found that profitability did not significantly affect firm value in the pharmaceutical sector, as companies lacked consistent growth in return on equity. This was partly due to declining stock performance caused by rupiah depreciation against the USD; and B.A.I. Putra & S. Sunarto (2021) found that profitability did not affect firm value, likely because management failed to use the company's assets effectively, leading to low net income despite large resources. This contradicts signalling theory, which suggests higher profitability should send a positive signal to investors.

Furthermore, studies by C. Iman *et al.* (2021) found that liquidity positively affects firm value. According to signalling theory, strong liquidity shows a company can meet short-term obligations, builds investor trust, and supports daily operations. This confidence encourages investment and raises share prices, increasing firm value; similarly, M. Jihadi *et al.* (2021) emphasised that greater liquidity strengthens investor confidence, as it shows that current assets can cover existing liabilities; moreover, R. Uli *et al.* (2020) reported that in the food and beverage industry, higher liquidity often coincides with increased firm value Efficient management of short-term obligations signals financial strength, attracting investor interest and boosting firm value.

The purpose of the study was to identify the factors influencing firm value and to offer benefits and insights to the stakeholders referenced in this paper, and to users of financial statements – particularly companies – as a basis for informed decision-making.

MATERIALS AND METHODS

This research employed a causal descriptive method, wherein the researchers described the conditions of each variable component in trading sector companies during the 2021-2023 period. The 2021-2023 period was used because the financial statements for 2024 have not yet been fully published on the IDX due to the ongoing audit process, while 2023 data remain important as they capture the decline in Initial Public Offering (IPO) stocks. Additionally, the study emphasised the contribution of the key variables – profitability, liquidity, and leverage – to firm value. The data analysis in this study was conducted using EViews 13.0 statistical software (Nuryanto & Pambuko, 2018). This software was employed to perform classical assumption tests, panel data regression analysis, and hypothesis testing, including t-tests, to evaluate the relationship between financial performance variables and firm value.

Based on empirical considerations, this study employed purposive sampling to select relevant observations from the target population (Sugiyono, 2018). The sample included trading sector companies listed on the IDX during the 2021-2023 period that meet the following criteria: (1) consistently listed during the period (i.e., no listing or delisting events), and (2) published complete annual financial statements for each year of observation. Financial data, including indicators such as Return on Equity (ROE), Current Ratio (CR), Debt to Equity Ratio (DER), and Price to Book Value (PBV), were extracted from audited annual reports available on the official IDX website Indonesia Stock Exchange (n.d.). This sector was selected due to its dynamic market behaviour and relevance in investor decision-making. A total of 55 companies met these criteria and were included in the final analysis. These consisted of 34 large-scale trading companies and 21 small-scale trading companies. The distribution of these firms by scale is presented in Table 1.

Table 1. List of large and small-scale trading company

Large Scale Trading Company			Small Scale Trading Company		
No.	Company's abbreviation	Company's full name	No.	Company's abbreviation	Company's full name
1	AGAR	PT Asia Sejahtera Mina, Tbk.	1	ACES	PT Ace Hardware Indonesia, Tbk.
2	AIMS	PT Akbar Indo Makmur Stimec, Tbk.	2	AMRT	PT Sumber Alfaria Trijaya, Tbk.
3	AKRA	PT AKR Corporindo, Tbk.	3	CSAP	PT Catur Sentosa Adiprana, Tbk.

Table 1. Continued

Large Scale Trading Company			Small Scale Trading Company		
No.	**Company's abbreviation**	**Company's full name**	**No.**	**Company's abbreviation**	**Company's full name**
4	APII	PT Arita Prima Indonesia, Tbk.	4	DAYA	PT Duta Intidaya, Tbk.
5	AYLS	PT Agro Yasa Lestari, Tbk.	5	DIVA	PT Distribusi Voucher Nusantara, Tbk.
6	BIKE	PT Sepeda Bersama Indonesia, Tbk.	6	DNET	PT Indoritel Makmur International, Tbk.
7	BLUE	PT Berkah Prima Perkasa, Tbk.	7	ECII	PT Electronic City Indonesia, Tbk.
8	BMSR	PT Bintang Mitra Semestaraya, Tbk.	8	ERAA	PT Erajaya Swasembada, Tbk.
9	BOGA	PT Bintang Oto Global, Tbk.	9	HERO	PT Hero Supermarket, Tbk.
10	CARS	PT Industri dan Perdagangan Bintraco Dharma, Tbk.	10	KOIN	PT Kioson Komersial Indonesia, Tbk.
11	CLPI	PT Colorpak Indonesia, Tbk.	11	LPPF	PT Matahari Department Store, Tbk.
12	DPUM	PT Dua Putra Utama Makmur, Tbk.	12	MAPA	PT MAP Aktif Adiperkasa, Tbk.
13	DWGL	PT Dwi Guna Laksana, Tbk.	13	MAPI	PT Mitra Adiperkasa, Tbk.
14	EPMT	PT Enseval Putera Megatrading, Tbk.	14	MCAS	PT M Cash Integrasi, Tbk.
15	FISH	PT FKS Multi Agro, Tbk.	15	MIDI	PT Midi Utama Indonesia, Tbk.
16	HADE	PT Himalaya Energi Perkasa, Tbk.	16	MPPA	PT Matahari Putra Prima, Tbk.
17	HDIT	PT Hensel Davest Indonesia, Tbk.	17	NFCX	PT NFC Indonesia, Tbk.
18	HEXA	PT Hexindo Adiperkasa, Tbk.	18	RALS	PT Ramayana Lestari Sentisa, Tbk.
19	INTD	PT Inter Delta, Tbk.	19	RANC	PT Supra Boga Lestari, Tbk.
20	IRRA	PT Itama Ranoraya, Tbk.	20	SONA	PT Sona Topas Tourism Industry, Tbk.
21	KMDS	PT Kurniamitra Duta Sentosa, Tbk.	21	TELE	PT Omni Inovasi Indonesia, Tbk.
22	LTLS	PT Lautan Luas, Tbk.			
23	MICE	PT Multi Indocitra, Tbk.			
24	MPMX	PT Mitra Pinasthika Mustika, Tbk.			
25	OPMS	PT Optima Prima Metal Sinergi, Tbk.			
26	PMJS	PT Putra Mandiri Jembar, Tbk.			
27	SDPC	PT Millennium Pharmacon International, Tbk.			
28	SGER	PT Sumber Global Energy, Tbk.			
29	TFAS	PT Telefast Indonesia, Tbk.			
30	TGKA	PT Tigaraksa Satria, Tbk.			
31	UNTR	PT United Tractors, Tbk.			
32	WAPO	PT Wahana Pronatural, Tbk.			
33	WICO	PT Wicaksana Overseas International, Tbk.			
34	ZBRA	PT Dosni Roha Indonesia, Tbk.			

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.)

The regression analysis in this study employed the Random Effects Model (REM). This model was selected based on the results of the Chow test and the Hausman test, which indicated that REM was more appropriate than the Fixed Effects Model (FEM) or the Common Effects Model. The REM was therefore used to estimate the relationship between the independent variables and firm value, considering unobserved heterogeneity across firms. Hypothesis testing was conducted in this study to evaluate the influence of each independent variable on firm value:

Ha_1: Profitability has a positive effect on firm value.

H_{01}: Profitability does not have a positive effect on firm value.

Ha_2: Liquidity has a positive effect on firm value.

H_{02}: Liquidity does not have a positive effect on firm value.

Ha_3: Leverage has a negative effect on firm value.

H_{03}: Leverage does not have a negative effect on firm value.

The test was performed using a significance level of 5% ($\alpha = 0.05$). A variable was considered to have a significant effect if the absolute value of the t-statistic exceeded the critical t-value and the p-value was less than 0.05. The measurement scale used is a coefficient scale, so the variables are decomposed into sub variables:

Firm Value

Price to Book Value (PBV)

$$PBV = \frac{Market\ Price}{Book\ Value}\ x\ 100\%; \quad (1)$$

Profitability

Return on Equity (ROE)

$$ROE = \frac{Earnings\ After\ Tax\ (EAT)}{Total\ Equity}\ x\ 100\%; \quad (2)$$

Liquidity

Current Ratio (CR)

$$CR = \frac{Current\ Assets}{Current\ Liabilities}\ x\ 100\%; \quad (3)$$

Leverage

Debt to Equity Ratio (DER)

$$DER = \frac{Total\ Liability}{Total\ Equity} x\ 100\%. \quad (4)$$

RESULTS AND DISCUSSION

Table 2 presents a descriptive summary of the key financial variables used in this study. Overall, the data indicate considerable variation across firms, particularly in profitability and leverage levels. The differences observed in these variables suggest potential disparities in firm value, thus warranting further empirical analysis.

Figure 1 presents the average firm value, as measured by the PBV, for trading sector companies listed on the IDX over the 2021-2023 period.

Table 2. Descriptive research variables

	PBV	ROE	CR	DER
Mean	5.642196	-5.147655	6.520909	380,0691
Maximum	134.1998	2,197.150	213.1700	19,030.70
Minimum	-1.396207	-1,954.827	0.010000	-2,158.844
Std. Dev.	13.51440	250.4533	23.01808	1,627.234
Observations	165	165	165	165

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

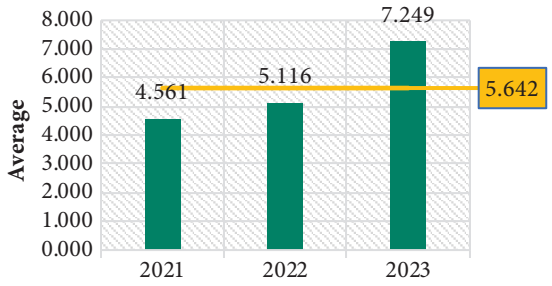

Figure 1. PBV of trading sector companies listed on the IDX during 2021-2023

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

The data reveal a clear upward trend in PBV, increasing from 4.561 in 2021 to 5.116 in 2022, and reaching 7.249 in 2023. This trajectory places the 2023 PBV well above the three-year average of 5.642, indicating a significant improvement in market valuation. To enhance the analytical relevance of this figure, it is important to explore possible contributing factors to this rise – such as improved profitability, better investor perception, or sector-wide recovery post-COVID-19. These dynamics may explain why PBV levels varied across years, highlighting not just what the firm values were, but why such changes occurred. Figure 2 displays the average ROE of trading sector companies listed on the IDX for the 2021-2023 period.

The data show significant fluctuations in profitability, with a positive ROE of 3.825 in 2021, followed by a sharp decline to -12.711 in 2022, and a partial recovery to -6.556 in 2023. The three-year average stands at -5.148, indicating an overall negative trend in sectoral profitability during the observed period. This declining pattern raises questions about the structural financial health of trading companies. It is important to assess whether these negative ROE values reflect a broader industry challenge – such as narrow margins, rising costs, or systemic inefficiencies – or whether they are disproportionately influenced by a few large underperforming firms. Such context would help distinguish common performance trends from exceptional cases.

Figure 3 illustrates the average CR of trading sector companies listed on the IDX over the 2021-2023 period.

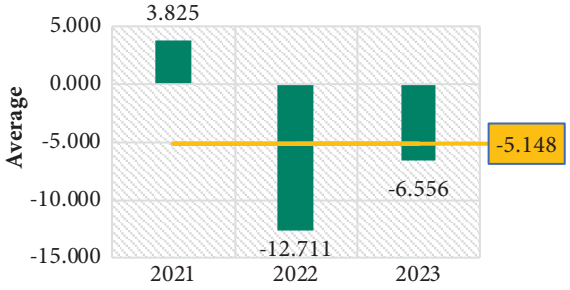

Figure 2. ROE of trading sector companies listed on the IDX during 2021-2023

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

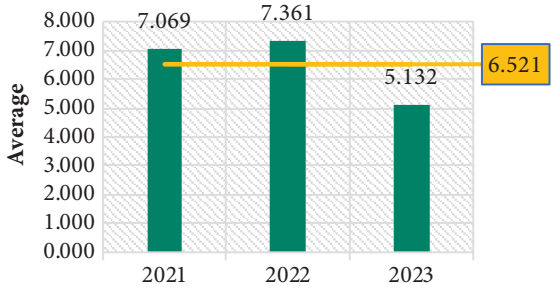

Figure 3. CR of trading sector companies listed on the IDX during 2021-2023

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

The data show relatively stable liquidity levels in 2021 (7.069) and 2022 (7.361), followed by a notable decline in 2023 (5.132), bringing the three-year average to 6.521. Despite the decline, the overall CR figures remain well above the standard benchmark of 2.0, which may signal excessive liquidity and raise questions about the efficiency of asset utilisation across the sector. To enhance the analytical value of this figure, it is necessary to assess whether high liquidity

levels are a consistent pattern across most firms or driven by a few outliers. Additionally, it is important to identify how many companies fall within an optimal liquidity range and whether the lower CR in 2023 reflects isolated cases or an emerging trend. Such analysis can offer deeper insight into whether current asset management practices are effective or in need of improvement. Figure 4 shows the average DER of trading sector companies listed on the IDX over the 2021-2023 period.

The data reveal a sharp upward trend in leverage levels, rising from 199.272 in 2021 to 327.332 in 2022, and peaking at 613.603 in 2023, with a three-year average of 380.069. This significant increase in DER suggests that firms may be increasingly dependent on debt financing to fund their operations or growth strategies. Rather than focusing solely on peak values, it is important to assess whether this reflects a systematic reliance on debt across most companies in the sector, or if the average is skewed by a few highly leveraged firms. Furthermore, such high leverage ratios may carry implications for investor confidence and financial risk, especially in the context of rising interest rates or market uncertainty. Understanding whether this is a strategic use of debt or a sign of financial strain is crucial for interpreting the financial posture of the sector.

Panel data regression. The results of the panel data regression analysis using EViews 13.0 are presented in Table 3.

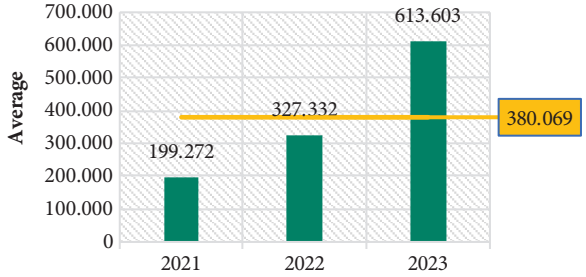

Figure 4. DER of trading sector companies listed on the IDX during 2021-2023

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

Table 3. Panel data regression using REM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.369811	1.119194	3.010926	0.0030
ROE	0.009091	0.003088	2.943840	0.0037
CR	0.360449	0.031740	11.35624	0.0000
DER	-8.23E-05	0.000472	-0.174306	0.8618
Effects Specification				
			S.D.	Rho
Cross-section random			6.601239	0.4132
Idiosyncratic random			7.865981	0.5868
Weighted Statistics				
R-squared	0.499814	Mean dependent var		3.197936
Adjusted R-squared	0.490494	S.D. dependent var		10.95287
S.E. of regression	7.818130	Sum squared resid		9,840.829
F-statistic	53.62670	Durbin-Watson stat		1.642620
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.445472	Mean dependent var		5.642196
Sum squared resid	16,609.69	Durbin-Watson stat		0.973212

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

Based on the outcomes of the Chow and Hausman tests for model selection, this study determined that the REM is the most appropriate for the panel data analysis. The regression equation illustrates the influence of Return on Equity (ROE), Current Ratio (CR), and Debt to Equity Ratio (DER) on Price to Book Value (PBV) as follows, using the panel data regression model specified in equation (1):

$$PBV = 3.369 + 0.009\ ROE + 0.360\ CR - 8.23^{e\text{-}05}\ DER.$$

The effect of Return on Equity (ROE) on Price to Book Value (PBV). The t-test results indicate that the Return on Equity variable (ROE) has a t-statistic of 2.943, which exceeds the critical t-value of 1.654. At a 5% significance level and a p-value of 0.0037, the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_1). This signifies that Return on Equity (ROE) has a significant positive effect on Price to Book Value (PBV) in trading sector companies during the 2021-2023 period, as indicated in Table 4.

Table 4. Results of partial hypothesis testing of the effect of Return on Equity on Price to Book Value

Model	t_{count}	t_{table}	α	Prob.t	Result
$X_1 \rightarrow Y$	2.943	1.654	0.05	0.0037	**Ha accepted**

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

I. Fahmi (2020) found that profitability is a ratio that measures the overall effectiveness of management, indicated by the amount of profit generated relative to sales or investments. ROE ratio, also known as Return on Equity, assesses the extent to which a company utilises its resources to generate profits from shareholders' equity. Moreover, profitability reflects a company's ability to maximise profits to achieve both short-term and long-term objectives (Sergiienko *et al.*, 2023). Therefore, companies with high profitability can increase their firm value. Furthermore, the results of this study are consistent with previous research conducted by N.P. Febriyanti & H.T. Hasibuan (2025). This finding indicates that a company's profitability level plays a crucial role in shaping its firm value. Greater profitability demonstrates the firm's strong capacity to generate earnings from its core operations, which positively influences investor perception. It supports the notion that firms with high profitability are viewed as having promising prospects, consistent dividend potential, and long-term growth. As a result, investor trust strengthens, driving up stock prices and elevating firm value. Therefore, profitability functions as a key indicator of a company's performance and future outlook; S.G. Pambudi & Z. Meini (2023) the findings reveal that profitability exerts a positive and statistically significant influence on firm value. This suggests that as a company's profitability increases, its value tends to rise accordingly. Companies generating substantial profits are likely to draw investor interest, which boosts share demand and subsequently enhances the firm's overall value; according to N.K. Cahyani *et al.* (2023) the profitability ratio, represented by ROE, serves as a measure of a bank's management effectiveness in utilising its equity to generate profits. This ratio helps to assess the return earned on the capital invested by shareholders. In accordance with signalling theory, high profitability reflects favourable company performance. When investors respond positively to this signal, it can lead to an increase in the firm's value; and according to Z.F. Akbar *et al.* (2022), the findings of this research offer empirical support that profitability has a positive impact on firm value. This implies that company managers strive to optimise net profit by efficiently utilising all corporate assets. Greater profitability leads to increased shareholder wealth, as it contributes to rising stock prices and enhanced firm value. R.A.H. Rachmat *et al.* (2019) increase in profitability reflects the company's strong earning capability, which in turn enhances its overall value. Higher profitability indicates greater income generation, signalling strong financial performance. This builds investor confidence and attracts more investment, leading to increased stock demand. It reflects the company's ability to generate net profit from its operational activities. The portion of profit available for distribution to shareholders – namely, profit after interest and taxes – represents real earnings. Therefore, higher profitability contributes to an increase in firm value, as it is often reflected in rising share.

The average Return on Equity (ROE) of companies in the trade sector declined from 2021 to 2022, followed by an upward trend in 2023, although the average profitability remained negative. Despite this, the Price to Book Value (PBV) of trade sector companies exhibited a consistent upward trend throughout the 2021-2023 period. The largest contributor to the decline – and even negative profitability (losses) – between 2021 and 2022 was PT Wicaksana Overseas International Tbk, which recorded an ROE of -808.21% in 2022, a significant drop from -123.07% in 2021. According to the company's financial statements, losses increased from IDR 115,139,460,313 in 2021 to IDR 137,839,403,241 in 2022. This was primarily due to a decline in net sales of approximately IDR 951,089,349,907 between 2021 and 2022. Additionally, amid falling sales, the company failed to improve the efficiency of its cost of goods sold, resulting in minimal gross profit and consequently higher losses. Most trade sector companies demonstrated a positive relationship between Return on Equity (ROE) and Price to Book Value. Respectively Indonesia Stock Exchange (n.d.) one of the most notable examples is PT Matahari Department Store Tbk, which recorded ROE values of 90.74%, 238.42%, and 2,197.15% over the 2021-2023 period, accompanied by increases in firm value (PBV) to 10.83, 19.36, and 134.20.

The effect of Current Ratio (CR) on Price to Book Value (PBV). Based on the t-test results, the Current Ratio variable (CR) has a t-statistic value of 11.356, which is greater than the t-table value of 1.654. At a 5% significance level and a p-value of 0.0000, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted. This indicates that Current Ratio (CR) has a significant positive effect on Price to Book Value (PBV) in trade sector companies listed on the Indonesia Stock Exchange during the 2021-2023 period, as reported in Table 5.

Table 5. Results of partial hypothesis testing of the effect of Current Ratio on Price to Book Value

Model	t_{count}	t_{table}	α	Prob.t	Result
$X_2 \rightarrow Y$	11.356	1.654	0.05	0.0000	**Ha accepted**

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

K. Kasmir (2019) explained that the liquidity ratio, often known as the working capital ratio, serves to evaluate a company's liquidity by comparing elements from the balance sheet, specifically total current assets and total current liabilities (short-term obligations). This ratio can be analysed across several periods to monitor changes and trends in the company's liquidity over time. A. Sartono (2017) stated that a high level of liquidity reflects a company's strong ability to meet its short-term obligations. Companies with good liquidity are perceived by investors as having strong financial performance. Therefore, high liquidity indicates that a company is in sound financial condition, which increases demand for its shares and, consequently, raises its stock price and overall firm value. Furthermore, the results of this study are consistent with prior research conducted by D.P. Aji *et al.* (2024) on the liquidity ratio that positively

influences firm value. This significant relationship suggests that a strong liquidity position contributes to higher firm value. High liquidity reflects the firm's effective management of its current assets. It indicates the firm's ability to meet its short-term obligations using its current assets – meaning that the greater the current assets, the stronger the firm's capacity to settle its debts; according to Y.E. Kartika & N.L. Wiagustini (2024), this study revealed that liquidity positively influences firm value. This indicates that increases in liquidity – measured by the current ratio – among F&B companies listed on the IDX during the 2018-2022 period were positively perceived by investors, leading to higher demand for shares and, consequently, rising stock prices that reflect enhanced firm value. These findings support the Signalling Theory, suggesting that investors interpret strong liquidity as a positive signal of future company performance, prompting increased stock demand and driving up firm value. According to S.G. Pambudi & Z. Meini (2023), liquidity has a positive and statistically significant impact on firm value. This implies that firms with strong liquidity are more likely to instil investor confidence in their overall performance. Higher liquidity levels are associated with greater market value for the company. According to K. Sari *et al.* (2023), the test results indicate that liquidity, as measured by the CR, has a positive and significant impact on firm value. This finding confirms that an improvement in CR can enhance firm value. Consistent with Signalling Theory, this suggests that strong liquidity sends a positive signal to investors, as it reflects the firm's ability to meet its financial obligations, thereby increasing investor confidence.

The average Current Ratio (CR) of companies in the trade sector increased from 2021 to 2022 but tended to decline in 2023. Nevertheless, this trend was accompanied by a consistent increase in Price to Book Value (PBV) among companies in the trade sector during the 2021-2023 period. The most significant contributor to the increase in liquidity from 2021 to 2022 was PT Optima Prima Metal Sinergi Tbk, whose CR rose from 170.76 in 2021 to 213.17 in 2022. This improvement occurred because the company successfully reduced its short-term liabilities, such as accrued expenses and tax payables, indicating its ability to increase current assets capable of covering its short-term obligations. Conversely, the sharpest decline in liquidity from 2022 to 2023 was recorded by PT Akbar Indo Makmur Stimec Tbk, whose CR dropped to 0.01. This occurred because, in 2023, the company experienced a significant decrease in receivables amounting to IDR 9,936,469,842, which were more than 60 days overdue. The decline in receivables was not due to payment collection but rather to the impairment in their value, along with a proportion of short-term liabilities that far exceeded its current assets. Most of the Current Ratio (CR) levels in companies within the trade sector indeed show a positive relationship with firm value. For example, the largest contribution comes from PT Duta Intidaya, Tbk., which recorded Current Ratio (CR) values of 0.67, 0.71, and 0.73 during 2021-2023, followed by an increase in Price to Book Value (PBV) of 10.23, 15.08, and 49.21 respectively.

The Effect of Debt to Equity Ratio (DER) on Price to Book Value (PBV). The t-test results indicate that the Debt to Equity Ratio (DER) has a t-value of -0.174, which is less in absolute value than the critical t-value of ±1.654. At a 5% significance level and a p-value of 0.8618, the null hypothesis (H_0) is accepted, while the alternative hypothesis (H_1) is rejected. This implies that Debt to Equity Ratio (DER) does not have a significant effect on Price to Book Value (PBV) in trading sector companies during the 2021-2023 period, as shown in Table 6.

Table 6. Results of hypothesis testing of the effect of liquidity leverage on firm value

Model	t_{count}	t_{table}	α	Prob.t	Result
$X_3 \rightarrow Y$	-0,174	-1,654	0,05	0,8618	**Ha rejected**

Source: compiled by the authors based on the Indonesia Stock Exchange (n.d.) using Eviews 13.0 analysis software

According to S.A. Ross *et al.* (2016), leverage reflects a company's ability to finance its obligations using the equity it owns, and one common measure of leverage is the DER. A higher DER indicates greater reliance on debt financing relative to equity, which typically increases investment risk. Rising leverage can signal higher risk, potentially leading to a decline in firm value and increasing the likelihood of financial distress. However, based on the conditions of trading sector companies during 2021-2023, this explanation does not align with the findings of this study. The test results show that Debt to Equity Ratio (DER) does not have a significant effect on rice to Book Value (PBV) in this sector. Consequently, the third hypothesis of this study is not supported. Although the statistical results show a negative relationship between leverage and firm value, the effect is not statistically significant.

Furthermore, the results of this study are consistent with prior research by S.N. Sukmajaya & D.G. Wirama (2025), which indicates that leverage has no impact on firm value. Leverage, defined as the mix of debt and equity in a company's long-term financing, creates varied investor perceptions. High debt can suggest a company cannot self-finance its operations, yet it can also signal strong long-term business prospects. This conflicting view explains why leverage, specifically when measured by DER, does not affect firm value; according to M. Fadhilah & T.D. Widajantie (2024) this means a higher leverage does not guarantee a higher firm value. Changes in a company's funding sources, whether increasing or decreasing, will not affect its overall firm value. Investors do not focus on the company's debt; instead, they prioritise how effectively and efficiently management uses its resources to boost firm value. A high leverage level simply indicates that the company's assets are primarily funded by external loans; and based on D.R. Saputri & S. Bahri (2021) result, indicates that the independent variable, DER has no effect on firm value. In this study, investors do not prioritise a company's debt level. Instead, they are more concerned

with how effectively the company uses its funds to generate profits. Therefore, company management should strategically leverage any existing debt.

The financial condition of trading sector companies listed on the Indonesia Stock Exchange during 2021-2023 shows that Debt to Equity Ratio (DER) does not have an effect on Price to Book Value (PBV). This means that investors tend not to assess a company, especially in the trading sector, solely based on the comparison between the company's debt and equity. Instead, investors pay more attention to how the company's management can effectively and efficiently manage the company's funds to create added value for the company both now and in the future. Given the highly varied and fluctuating Debt to Equity Ratio (DER) in the trading sector, it does not have a significant impact on Price to Book Value (PBV) because there are other factors that tend to have a greater influence on the company's value.

CONCLUSIONS

Based on the research, it can be concluded that both profitability and liquidity have a significant positive impact on the value of the firm. An increase in any of these indicators usually increases the value of the company, while a decrease can led to its decrease. In addition, profitability indicates a company's capability to optimise earnings to fulfill both short-term and long-term goals. Consequently, firms with strong profitability are more likely to enhance their overall value, and investors view companies with strong liquidity as financially healthy. As a result, high liquidity signals solid financial standing, leading to greater investor interest, which, in turn, drives up the stock price and enhances the firm's overall value. In contrast, leverage does not demonstrate a statistically significant impact on the value of the firm, which indicates that fluctuations in the level of debt are not always associated with changes in the market valuation of the company. An elevated DER suggests that a company depends more on debt than equity for financing, which generally heightens investment risk. Increased leverage may be perceived as a risk signal, potentially reducing the firm's value and raising the risk of financial instability. Future studies should explore a broader set of variables – such as firm size, efficiency, and ownership structure – and larger samples to gain deeper, cross-sectoral insights into the determinants of firm value.

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Ліліс Мар'янті
Магістр
Університет Відятама
40125, вул. Чикутра, 204А, м. Бандунг, Індонезія
https://orcid.org/0009-0003-2847-5630

Андгіка Гардіка
Магістр
Університет Відятама
40125, вул. Чикутра, 204А, м. Бандунг, Індонезія
https://orcid.org/0000-0002-3502-4518

Суджі Салег
Магістр
Університет Відятама
40125, вул. Чикутра, 204А, м. Бандунг, Індонезія
https://orcid.org/0009-0003-0690-4588

Оцінка впливу фінансової результативності на вартість компанії: емпіричне дослідження підприємств торговельного сектору, що котируються на Індонезійській фондовій біржі (IDX) у період 2021-2023 років

Анотація. Актуальність дослідження зумовлена зростаючою потребою у розумінні того, як ключові фінансові показники впливають на сприйняття інвесторами компаній і їхню ринкову оцінку в умовах динамічної економіки. Метою цього дослідження було визначити вплив показників прибутковості, ліквідності та фінансового левериджу на вартість компаній торговельного сектору, що котируються на Індонезійській фондовій біржі (IDX) у період 2021-2023 років. У дослідженні використано регресійний аналіз панельних даних за допомогою програмного забезпечення EViews 13.0, а також причинно-описовий підхід. Об'єктом аналізу стали 55 компаній, відібраних методом цілеспрямованої вибірки. Для перевірки гіпотез застосовувався метод випадкових ефектів (REM). Результати показали, що прибутковість і ліквідність мають статистично значущий позитивний вплив на вартість компанії. Як правило, поліпшення цих показників призводить до зростання вартості компанії, а їх зниження – до зменшення. Водночас фінансовий леверидж не мав статистично значущого впливу, що свідчить про те, що зміни в рівні заборгованості не обов'язково відображаються на ринковій вартості компанії. Зокрема, кожне зростання рентабельності власного капіталу (ROE) на 1 % збільшує коефіцієнт ціна/балансова вартість (PBV) на 0,009 одиниці, тоді як зростання поточного коефіцієнта (CR) на одну одиницю підвищує PBV на 0,360. Натомість коефіцієнт співвідношення боргу до власного капіталу (DER) мав незначний негативний коефіцієнт (-0,0000823), який не був статистично значущим у моделі. Це дослідження надало практичні рекомендації щодо підвищення вартості компанії шляхом покращення прибутковості, ліквідності, фінансового управління та комплексного фінансового аналізу, що виходить за межі простого контролю левериджу

Ключові слова: ціна до балансової вартості; рентабельність власного капіталу; поточне співвідношення; співвідношення боргу до власного капіталу; леверидж

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Olena Shandrivska*
PhD in Economics, Associate Professor
Lviv Polytechnic National University
79000, 12 Stepan Bandera Str., Lviv, Ukraine
https://orcid.org/0000-0002-4335-2423

Research into the competitive environment of enterprises in the Ukrainian arms market

Abstract. The increasing role of the competitive environment in shaping the strategic resilience of enterprises within Ukraine's defence industry complex under martial law necessitates a thorough analysis. The aim of the study was to identify the specific features of market conditions in the arms production sector and to assess the competitive environment of national enterprises. The study applied methods of comparative analysis, statistical evaluation, synthesis, and scientific generalisation. The source base consisted of official statistical data from SIPRI (Stockholm International Peace Research Institute) and data on the revenue of Ukrainian arms producers using the Ukrainian analogous online platform Clarity Project. It was established that in 2023, the Herfindahl-Hirschman Index for thirteen leading enterprises of Ukraine's Defence Industry Complex (DIC) was 2,167.63, indicating a high concentration of production. The Gini Index for the income indicators of these companies reached 0.4935, pointing to a moderate unevenness in their distribution. The composition of the core of the Ukrainian arms market in 2023 remained unchanged relative to 2022. It included four leading enterprises, which indicated a stabilisation of competitive struggle in 2022-2023. In 2024, the Herfindahl-Hirschman Index for the thirteen DIC leaders was 2,791.384, demonstrating an increase in production concentration. The Gini Index (by income) for the leading enterprises rose to 0.5656765, indicating a slight increase in the unevenness of their distribution. A change in the market's core composition was recorded: compared to 2023, a fifth enterprise, based on arms market share, joined it, indicating increased competition. Asymmetry between the contractual volumes of state orders and the production capabilities of enterprises was also identified. The logistical infrastructure remained insufficiently developed, which limited the speed of supplying military units with equipment and resources. Separately, a shortage of qualified personnel and reliance on imported components were noted. The research results can be used in defence planning, for improving state procurement mechanisms, and for coordinating cooperation with international partners in the field of security and armaments

Keywords: global instability; security; Ukraine's defence industry; concentration; segmental structure; order contracting; military expenditure

INTRODUCTION

In the context of the full-scale war in Ukraine, the issue of determining the potential of the national defence industry and the logistical mechanisms for supplying the arms market has gained particular significance as a component of the state's security strategy. Instability in contracting, breaks in supply chains, export restrictions, and the risks of illegal arms trafficking create a need for an analytical assessment of the market structure and its level of functional adaptation to armed conflict conditions.

O. Sokhatskyi (2020) investigated the peculiarities of military expenditures in conditions of escalating geopolitical risks and the transformation of the vector of international conflicts. The author argued for the "hybrid" nature of modern conflicts and defined the essence of asymmetrical wars, categorised military expenditures as defence and security expenditures related to the development of the state's military organisation; it was proposed to distinguish expenditures on international activities aimed at preserving peace.

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*Corresponding author

Y.B. Khanyk & M.L. Danilovich-Kropyvnytska (2021) analysed the volumes of military goods exports in quantitative and material terms, their geographical structure, and the export authorisations for various economic entities under relatively stable conditions before the armed conflict in Eastern Ukraine and during its escalation from 2014. Based on the research results, it was concluded that to expand arms markets and establish its political status as a state, Ukraine should continue to develop state marketing policy through participation in domestic and foreign exhibitions and advertising military goods in specialised Ukrainian publications.

M. Zhyrokhov & M. Maksymchuk (2021) and T. Belyalov & A. Liumanov (2024) outlined the development trends of private business in the Ukrainian arms market. The authors noted the growth of the private sector's share in the structure of the Ukrainian arms market, which intensifies the trends of escalating competition from private arms producers. The authors F. Zhuravka *et al.* (2021) investigated the prospects for Ukraine's integration into the global arms market to secure its armed forces. The authors noted that an adequate level of integration into the global arms market, achieved through maximising arms exports, requires a controlled security environment. Scholars T. Kim *et al.* (2022) revealed modern trends in the global arms market from the perspective of solving the global problem of peace and demilitarisation. The authors argued that an increase in militarisation is currently observed due to high international tensions worldwide, hence there is an indefinite postponement of resolving the global problem of peace and demilitarisation. The impact of economic motivation, as the interest of private companies in increasing arms production and sales for profit, is assessed by the authors as significant, and thus all marketing means are used to promote arms in markets.

T.I. Kim & Yu.M. Ukrainets (2022) investigated the state of the military-industrial complex in the modern world economy. Based on a comparative analysis of country rankings by main economic indicators, global competitiveness indices, and military strength index, the authors show that the largest military-industrial complexes belong to representatives of all three types of countries. It is proven that military power is determined by the level of economic development, the level of military expenditures, participation in international arms trade, and the use of new technologies of the Fourth Industrial Revolution in arms production. The authors noted that excessive growth of the military-industrial complex increases the risks of militarisation and threats of large-scale military actions, which requires control and restrictions by international institutions.

N.Ie. Seliuchenko & T.B. Danylovych (2023) compared EU countries by GDP volumes and military expenditures per capita. It was concluded that in most countries, these indicators correlate. As a result of grouping countries, three clusters were obtained. Ireland forms a separate cluster as it has the largest GDP and one of the lowest military expenditures per capita. The second cluster contains 11 countries and has the highest values of statistical indicators. The third cluster includes 14 countries. In the defence sector, the implementation of innovations is intensifying, which increases its attractiveness for private investors. V.H. Hornyk & O.L. Yevmeshkina (2023) revealed the specifics of forming and implementing military policy as part of Ukraine's defence policy. The essence of the state's military policy, its subject composition, and the objects of military policy were disclosed. An analysis of strategic planning documents for the state's military policy was carried out. The functions of modern military policy were reviewed. The main emphases of Ukraine's military policy in the post-war period were summarised. A conclusion was drawn regarding the need to maintain technological redundancy, long-term provision, and cybersecurity management within the state's military policy system.

Authors O.B. Poltoratskyi & Yu.V. Lutsenko (2024) revealed the principles of combating crime in the context of global security policy. When studying foreign experience in combating crime in Italy, attention was drawn to the fact that major criminal offences include, among others, illegal arms trafficking. When examining the activities of organised crime in the USA, it is noted that the main areas of organised crime activity include terrorism using weapons. The specificity of crime, such as its transnational and global nature, was noted. O.V. Danyliuk (2024) conducted a study of the risk measurement system related to the possible hidden influence by hostile countries through the prism of ensuring national security. It was found that most NATO and EU countries lean towards the American model of control and countering foreign influence. Criteria for assessing the degree of threat of hidden external influence were determined. The importance of possessing information necessary for a correct assessment of the degree of risk was emphasised, and it was noted that the criminalisation of hidden influence is an important element of the national security system.

The issue of the specifics of the arms market development in Ukraine is under-researched given the active hostilities in Ukraine and requires further investigation, including from marketing and logistics perspectives. Therefore, the aim of the study was to analyse the structure and dynamics of the competitive environment in the Ukrainian arms market, and to characterise the key factors influencing the formation of its conjuncture in wartime conditions. The objectives of the study were: to assess the production potential and logistical support of the armed forces of Ukraine in wartime conditions; to assess the concentration of the competitive environment of enterprises in the Ukrainian arms market under disruptive conditions; to analyse the segmental structure of the Ukrainian arms market.

MATERIALS AND METHODS

A systematic method was used to study the Ukrainian arms market during the war as a complex system in terms of analysing the demand for weapons and potential factors influencing it, studying industry competitors and assessing the concentration of the arms market, and identifying

opportunities for business development and expansion. A problem-oriented method was used to identify the main problems and issues of economic development of the arms market in Ukraine during a period of economic uncertainty, which made it possible to identify the key aspects of the problematic development of the arms market. At the initial stage of the analysis, relevant enterprises were selected based on the Classification of Economic Activities (CEA), where the corresponding codes were identified that provide for activities related to the production of arms in Ukraine. The method of statistical information analysis was applied in the process of analysing the dynamics of the economic development of the arms market in Ukraine, which allowed for conclusions about the state of the arms market and the formation of directions for its development. During the assessment of the Ukrainian arms market capacity and the revenue of individual arms producers within it, data published by SIPRI (Stockholm International Peace Research Institute) were used, specifically regarding the revenue of the TOP-500 global arms market leaders, volumes of Ukrainian arms and military equipment exports and imports, and defence expenditures (Mathew *et al*., 2025).

To calculate the Herfindahl-Hirschman and Gini indices (HHI), conduct ABC-analysis, and determine the market concentration ratio, financial indicators of net income (revenue) for 2023-2024 of the TOP-13 leading enterprises in the Ukrainian arms market, selected by the criterion of revenue volume (over 2 billion UAH), were used. These enterprises include: Limited Liability Company "Ukrainian Armoured Vehicles", Public Joint-Stock Company "Motor Sich", Limited Liability Company "SPETS-KOM-SERVIS", Private Joint-Stock Company "Scientific and Production Association "Praktyka", Joint-Stock Company "Company of Aviation and Rocket-Technical Machine-Building", Limited Liability Company "Production-Innovation Company "DEVIRO", LLC "Screentech", Limited Liability Company "Kyiv Armoured Plant", Limited Liability Company "Scientific and Production Enterprise of Chemical Products", Limited Liability Company "UKROP", State Enterprise "Design Bureau "Pivdenne" named after M.K. Yangel", Limited Liability Company "Def C", and State Enterprise "Production Association Southern Machine-Building Plant named after O.M. Makarov." The preliminary list of companies was formed based on open market participant information from the analytical resource Clarity Project (n.d.).

To calculate the Lind Index and the market concentration ratio of the five largest companies (CRC_5), net income indicators for 2022-2024 of the top five enterprises from the list of TOP-13 leading enterprises by revenue volume were used, as well as data on the total capacity of the Ukrainian arms market (in billion UAH), the official exchange rate of the US dollar of the National Bank of Ukraine, the number of employees in the industry, and expenses for innovation and development (National Bank of Ukraine, 2025). The methodology for calculating the Herfindahl-Hirschman, Gini, and Lind indices was taken from the official methodological document of the Antimonopoly Committee of Ukraine (2020). The Herfindahl–Hirschman Index (HHI) was calculated to analyse the level of concentration and competition in the Ukrainian arms market, allowing for an assessment of how much it is controlled by a few large players or distributed among many small entities, using the formula:

$$HHI = \sum_{i=1}^{N} S_1^2, \quad (1)$$

where s_i – market share of the i-th arms producer, %; n – TOP-13 enterprises. An Herfindahl-Hirschman Index value below 1,000 indicates insignificant concentration in the Ukrainian arms market, in the range of 1,000 to 1,800 – moderate concentration, and above 1,800 – high concentration. An increase in HHI indicates growing risks due to a decrease in the level of competition and potential price increases. If the number of companies analysed increases, the Herfindahl-Hirschman Index value will decrease. The market share of leading enterprises is determined by the formula:

$$\chi i = \frac{Ri}{M}, \quad (2)$$

where χi – market share held by the enterprise in the Ukrainian arms market, UAH ths.; M – capacity of the Ukrainian arms market, UAH ths. Capacity is determined considering the total share of leading enterprises during 2022-2024. To determine the number of dominant enterprises, the Lind Index is calculated using the formulas:

$$IL = \frac{1}{k-1} \times \sum_{m=1}^{k-1} l_m, \quad (3)$$

$$lm = \frac{\frac{1}{m}\sum_{m=1}^{m} q_i}{\frac{1}{k-m}\sum_{m+1}^{k-m} q_i}, \quad (4)$$

where k – number of largest enterprises (TOP-13 enterprises selected); m – number of largest enterprises from k large ones; Lm– ratio of the average share of m largest (out of k largest) enterprises to the average share of the remaining (k - m) enterprises. The index is calculated until the value $Lm + 1 > Lm$, indicating a "disruption of the continuity of the L indicator" and the appearance of a small enterprise share in the arms market. To determine the market concentration index, the formula is used:

$$CR = \sum_{i=1}^{m} R_i. \quad (5)$$

To assess the unevenness of enterprise incomes, the Gini Index is applied using the formula:

$$S = 1 - 2 * \sum_1^p z_c * Sumq_c + \sum_1^p z_c * q_c, \quad (6)$$

where χi – share of the i-th arms producer in the total from the TOP-13 enterprises; yi – share of the arms producer.

RESULTS AND DISCUSSION

The active phase of the war in Ukraine since February 2022 has prompted a review of strategic directions for the arms market's development, particularly an increased need for the complementary development of weapons systems. Concurrently, high-tech air defence systems and heavy weaponry capable of countering advanced drones

require intensified development. Diversification of arms production and supply sources involving enterprises from related industries (e.g., shipbuilding), the development of logistics supply chains with the involvement of civilian market operators, and the intensification of the IT sector for integrating artificial intelligence into innovative drone development have all become crucial. There is also a growing need to control illegal arms trafficking, driven by the accumulation of domestic arms stockpiles and cross-border trade. At the same time, the market demonstrates increased capacity due to demand exceeding supply, heightened competition in the government procurement segment, and the expansion of the defence sector, which as of 2024, encompasses approximately 500 enterprises and 300,000 employees.

The situation in Ukraine's defence sector during 2022-2024 has provoked an exacerbation of various types of competitive struggle in the Ukrainian arms market. This includes competition from foreign manufacturers for producing weapons themselves and supplying them to Ukraine; between Ukrainian state and private producers; for contracting Ukrainian capacities; for types of armaments based on procurement depending on quality and price levels, delivery logistics, and other forms of competition. It should be noted that the competitive struggle to enter the Ukrainian arms market in the production segment involves approximately 100 concerns from 20 countries worldwide. For example, notable concerns include Rheinmetall and Krauss-Maffei Wegmann (Germany), military companies BAE Systems, Babcock (Great Britain), the Franco-German arms group KNDS, and armoured vehicle manufacturer Roshel (Canada).

The gap between Ukrainian production capabilities and the volumes of potential arms procurements from the Ministry of Defence of Ukraine amounts to 9 billion USD (as of 2024). This gap leads to complex socio-economic disparities in the arms market, related to staff reductions, investment curtailment, stagnation in innovation development, and heightened competition, primarily in the procurement sphere. In view of the above, the degree of arms market concentration in the arms procurement segment was assessed (using formula (5)). Formula (5) was applied to determine the market concentration index. The study of the segmental structure, in terms of assessing procurement concentration (using the Herfindahl-Hirschman Index, formula (1)), allows avoiding the consideration of several enterprises belonging to a single economic entity and treating them as independent enterprises (Table 1).

Table 1. Identification of market concentration coefficients and the Herfindahl-Hirschman Index for the arms market using the example of TOP-13 enterprises in 2023

No.	Enterprise	Revenue (bln. UAH)	Share, % of total	*CR*, %	Share of TOP-13	*CR*, %	Groups A, B, C	*HHI*
1	LLC "Ukrainian Armoured Vehicles"	32.4	29.53	29.53	42.68	42.68	A	1,821.58
2	PJSC "Motor Sich"	8.5	7.75	37.28	11.21	53.89	A	125.66
3	LLC "SPETS-KOM-SERVIS"	6	5.47	42.75	7.91	61.8	A	62.57
4	PJSC "NVO "Praktyka"	4.8	4.38	47.13	6.33	68.13	A	40.07
5	JSC "Company of Aviation and Rocket-Technical Machine-Building"	4.1	3.74	50.87	5.40	73.53	A	29.16
6	LLC "Production-Innovation Company "DEVIRO"	3	2.73	53.6	3.95	77.48	A	15.60
7	LLC "Screentech"	2.9	2.64	56.24	3.82	81.3	B	14.59
8	LLC "Kyiv Armoured Plant"	2.5	2.28	58.52	3.29	84.59	B	10.82
9	LLC "Scientific-Production Enterprise of Chemical Products"	2.5	2.28	60.8	3.29	87.88	B	10.82
10	LLC "UKROP"	2.4	2.19	62.99	3.16	91.04	B	9.99
11	State Enterprise "Design Bureau "Pivdenne" named after M. K. Yangel"	2.3	2.10	65.09	3.03	94.07	B	9.18
12	LLC "Def C"	2.3	2.10	67.19	3.03	97.1	C	9.18
13	SE "PA Southern Machine-Building Plant named after O.M. Makarov"	2.2	2.01	69.20	2.90	100	C	8.41
-	TOP-13	75.9	69.20	-	100	-	-	2,167.63
-	Market capacity	109.71	100.00	100	-	-	-	-

Note: CR – cumulative ratio

Source: calculated by the author based on financial statements of enterprises obtained using the Clarity Project analytical platform (n.d.)

It has been established that LLC "Ukrainian Armoured Vehicles" is the leader in the arms market by revenue, with a 29.53% share, which is 3.8 times higher than that of its closest competitor, PJSC "Motor Sich" (7.75%). Thus, the concentration of power in the largest producer accounts for 29.53% of the market power of all enterprises, of which there are 500 as of 2023. The concentration of power in the TOP-4 is *CR* = 47.13%, or 6 out of 10 points

on the concentration assessment scale. The cumulative share of the TOP-13 enterprises in the arms market is 69.20%, while the remaining 487 enterprises collectively hold 30.8%, with the share of individual enterprises being below 2%, allowing their share to be disregarded in further calculations.

The Herfindahl-Hirschman Index for the 13 largest enterprises in 2023 was 2,167.63, receiving a rating of 5 out of 10 on the assessment scale. The absolute value of the Herfindahl-Hirschman Index at 2,167.63 indicates a high concentration in the arms production segment in Ukraine and the presence of asymmetry in the market under study. Focusing on the TOP-13 enterprises allowed for assessing the share of the largest player – LLC "Ukrainian Armoured Vehicles" – which amounted to 42.68%, exceeding the permissible limits for a single enterprise's market share and indicating a potential threat to the competitive environment. Conducting an ABC analysis of the participant structure allowed for grouping enterprises by their contribution to revenue. Thus, Group A included six enterprises with a cumulative share of 77.48%: LLC "Ukrainian Armoured Vehicles", PJSC "Motor Sich", LLC "SPETS-KOM-SERVIS", PJSC "NVO "Praktyka", JSC "Company of Aviation and Rocket-Technical Machine-Building", and LLC "Production-Innovation Company "DEVIRO". Group B comprised five enterprises with a cumulative share of 16.59%: LLC "Screentech", LLC "Kyiv Armoured Plant", LLC "Scientific-Production Enterprise of Chemical Products", LLC "UKROP", and SE "Design Bureau "Pivdenne" named after M. K. Yangel". Group C included two enterprises with a 2.9% share – LLC "Def C" and SE "PA Southern Machine-Building Plant named after O.M. Makarov".

In light of these results, it is appropriate to proceed with forming directions for strategic cooperation with enterprises in each group. This requires a comparative analysis of the results of ABC structuring within groups of arms manufacturers, followed by identifying their strengths and weaknesses. In developing strategic cooperation directions, it is important to consider factors influencing its depth – product quality and production processes, pricing specifics, the level of state regulation, tender practices, marketing strategies, etc. Applying a systemic approach enables the creation of an adaptive model of interaction with each group of enterprises, which must be constantly updated in accordance with changes in the security environment and market dynamics. Group A requires a special approach; its representatives, given the guarantees of product realisation during the war, are not obliged to maintain inventory, which allows avoiding unproductive storage costs. However, increased control over the number of manufacturers in this group and the accuracy of sales forecasting are necessary. For Group B enterprises, it is important to prevent the accumulation of surplus armaments, and Group C should be transformed by removing companies with potential losses and facilitating the transfer of more effective participants to higher categories. The results of the Herfindahl-Hirschman Index calculation (formula (1)) based on the performance of the TOP-13 enterprises in 2024 are presented in Table 2. Formula (5) was used to determine the market concentration index.

Table 2. Identification of market concentration coefficients and the Herfindahl-Hirschman Index for the arms market using the example of TOP-13 companies in 2024

No.	Enterprise	Revenue (bln. UAH)	Share, % of total	*CR*, %	Share of TOP-13	*CR*, %	Groups A, B, C	*HHI*
1	LLC "Ukrainian Armoured Vehicles"	58.248	23.09	23.09	50.18	50.18	A	2,517.87
2	PJSC "Motor Sich"	9.191	3.64	26.74	7.92	58.1	A	62.71
3	LLC "SPETS-KOM-SERVIS"	8.901	3.53	30.27	7.67	65.77	A	58.82
4	LLC "Production-Innovation Company "DEVIRO"	7.564	2.99	33.27	6.52	72.28	A	42.48
5	PJSC "NVO "Praktyka"	7.472	2.96	36.23	6.44	78.72	A	41.45
6	LLC "Screentech"	6.458	2.56	38.79	5.56	84.29	B	30.96
7	JSC "Company of Aviation and Rocket-Technical Machine-Building"	4.038	1.60	40.39	3.48	87.77	B	12.10
8	LLC "Kyiv Armoured Plant"	2.5	0.99	41.39	2.15	89.92	B	4.64
9	LLC "Scientific-Production Enterprise of Chemical Products"	2.5	0.99	42.38	2.15	92.07	B	4.64
10	LLC "UKROP"	2.4	0.95	43.33	2.07	94.14	B	4.28
11	SE "Design Bureau "Pivdenne" named after M.K. Yangel"	2.3	0.91	44.24	1.98	96.12	C	3.93
12	LLC "Def C"	2.3	0.91	45.15	1.98	98.10	C	3.93
13	SE "PA Southern Machine-Building Plant named after O.M. Makarov"	2.2	0.87	46.02	1.89	100	C	3.59
-	TOP-13	116.06	46.02	-	100	-	C	2,791.384
-	Market capacity	252.18	100	100	-	-	-	-

Source: calculated by the author based on financial statements of enterprises obtained using the Clarity Project analytical platform (n.d.)

It has been established that LLC "Ukrainian Armoured Vehicles" remains the leader in the arms market by revenue for the second consecutive year in 2024, with a 23.09% share, which is 6.34 times higher than that of its closest competitor, PJSC "Motor Sich" (3.64%). This means that the concentration of power in the largest producer accounts for 23.09% of the market power of all enterprises in the arms market, which number 500 as of 2024. The concentration of power in the TOP-3 (with a share exceeding 3%) in the arms market is *CR* = 30.26%, or 6 out of 10 points on the concentration assessment scale. The cumulative share of the TOP-13 enterprises in the arms market is 46.02%, while the remaining 487 enterprises collectively hold 53.98%, with the share of individual enterprises being below 3%, allowing their share to be disregarded in further calculations. The Herfindahl-Hirschman Index for the 13 largest enterprises in 2024 was 2,791.384, receiving a rating of 5 out of 10 on the assessment scale. The absolute value of the Herfindahl-Hirschman Index at 2,791.384 indicates a high concentration in the arms production segment in Ukraine and the presence of asymmetry in the market under study.

Focusing on the TOP-13 enterprises in 2024 (which are taken as 100% for the purposes of further analysis) allowed for assessing the share of the largest enterprise among them – LLC "Ukrainian Armoured Vehicles", which transforms into 50.18%. This does not allow the arms market to be considered safe for maintaining normal competition, given the exceeding of the permissible cumulative market share for TOP-1; TOP-2; TOP-3; and TOP-4 enterprises in the market. The application of the ABC analysis methodology for structuring the procurement segment into groups in 2024 showed that Group A of the TOP-13 included 5 enterprises (LLC "Ukrainian Armoured Vehicles"; PJSC "Motor Sich"; LLC "SPETS-KOM-SERVIS"; JSC "Company of Aviation and Rocket-Technical Machine-Building"; LLC "Production-Innovation Company "DEVIRO" and PJSC "Scientific and Production Association "Praktyka") with a cumulative share of 78.73% by revenue from the TOP-13. Group B included 5 enterprises (LLC "Screentech"; JSC "Company of Aviation and Rocket-Technical Machine-Building"; LLC "Kyiv Armoured Plant"; LLC "Scientific and Production Enterprise of Chemical Products"; LLC "UKROP") with a cumulative share of 15.41% by revenue, accounting for 38.46% by quantity in the TOP-13. Group C included 3 enterprises – SE "Design Bureau "Pivdenne" named after M.K. Yangel"; LLC "Def C"; SE "PA Southern Machine-Building Plant named after O.M. Makarov" with a cumulative share of 5.85% by revenue in the TOP-13. To assess the concentration of the Ukrainian arms market using the Linda index, it was decided to analyse the TOP-5 enterprises that could potentially enter the core of the arms market. For this purpose, the revenue of the leading companies was analysed, and based on this, their market shares were assessed, which are used to evaluate the Lind Index (Table 3).

Table 3. Analysis of changes in net income of the top 5 enterprises, thousand UAH

No.	Enterprise	2022	2023	2024	2023/2022	2024/2023
1	LLC "Ukrainian Armoured Vehicles"	13,079,235	32,423,502	58,238,390	2.48	1.80
2	PJSC "Motor Sich"	10,466,608	8,554,789	9,190,995	0.82	1.07
3	LLC "SPETS-KOM-SERVIS"	3,221,301	6,048,359	8,900,875	1.88	1.47
4	PJSC "NVO 'Praktyka'"	1,342,576	4,824,744	7,472,228	3.59	1.55
5	JSC "Company of Aviation and Rocket-Technical Machine-Building"	1,911,510	4,144,075	3,011	2.17	0.0007
	Other enterprises	1,758,770	53,714,531	317,694,501	30.54	5.91
	Capacity	$3{,}178\times10^4$	$10{,}971\times10^4$	$40{,}150\times10^4$	3.45	3.66
	For reference:					
1	Official exchange rate of the US dollar (average for the period), UAH/USD	32.34	36.57	40.15	1.13	1.10
2	Number of employed persons, thousand people	250	300	300	1.2	1.0
3	Expenditure on innovation and development, billion UAH	2.5	12	39	4.8	3.25
4	GDP growth rate				5.3	2.9

Source: calculated by the author based on financial reporting data obtained from Clarity Project (n.d.) and data from the National Bank of Ukraine (2025)

The dynamics of revenue changes for the top five companies in the arms market in 2023 shows the highest growth in PJSC "NVO 'Praktyka'" – 3.59 times, which allowed to take fourth place in 2023 with revenues of UAH 4,824,744 thousand; LLC "Ukrainian Armoured Vehicles" – 2,479 times, which helped take the leading position in the arms market with revenues of UAH 32,423,502 thousand; LLC "SPETS-KOM-SERVIS" – 1,877 times, which allowed to rank third with revenues of UAH 6,048,359 thousand. PJSC "Motor Sich", despite a decline in revenue to 0.81 (or UAH 8,554,789 thousand), ranks second in the rating. The capacity of the arms market grew in 2024 to UAH 401.500 billion, an increase of 3.66 times compared to 2023. Expenditures on innovation and development grew significantly in 2024, reaching UAH 39 billion, or 3.66 times higher than in 2023. Based on data on the revenue of the top five leaders and the capacity of the arms market, their shares were determined using

formula (2). The results of the calculations of the shares of enterprises and the analysis of the dynamics of changes in the shares of the top five enterprises in the arms market are presented in Table 4.

Table 4. Analysis of changes in the share of the top 5 companies, %

No.	Enterprise	2022	2023	2024	2023/ 2022, bps	2024/ 2023, bps
1	LLC "Ukrainian Armoured Vehicles"	41.16	29.56	14.51	-11.60	-15.05
2	PJSC "Motor Sich"	32.93	7.80	2.29	-25.14	-5.51
3	LLC "SPETS-KOM-SERVIS"	10.14	5.51	2.22	-4.62	-3.29
4	PJSC "NVO 'Praktyka'"	4.23	4.40	1.86	0.17	-2.54
5	JSC "Company of Aviation and Rocket-Technical Machine-Building"	6.01	3.78	0.0008	-2.234	-3.78
	Market concentration index CRC_5	94.47	51.05	20.8808		
	Other enterprises	5.53	48.95	79.13	43.42	30.18
	Capacity	100	100	100	-	-

Note: bps – basis points
Source: calculated by the author based on data from Table 3

According to Table 4, in 2022-2024, the shares of the top five companies in the arms market changed most significantly in the direction of decline for PJSC "Motor Sich" and LLC "Ukrainian Armoured Vehicles" (-25.14 percentage points and -11.6 percentage points, respectively); The most stable indicators were demonstrated by PJSC "NVO "Praktyka" at +0.17. The top five defence industry companies accounted for 20.88% of the arms market in 2024. Among the five leaders, there is a negative trend in market share growth, as reflected in the market concentration index. In particular, the total share of the five leading companies (CRC_5) is undergoing significant transformations – from 94.47% – thanks to complete dominance in the market under review based on the results of 2022, to 51.05% based on the results of operations in 2023, and to 20.88% in 2024. High market concentration index values in 2022 indicate a high level of concentration during this period and testify to the stable oligopolisation of the arms market. The sharp decline in the market concentration index in 2024 indicates the emergence of a competitive environment in the arms market, which is confirmed by an increase in the number of arms producers in 2022-2024 (by 20%), as well as by the growth in innovation spending and rapid development during this period (by 15.6 times). The Lind Index (formula (3), formula (4)) served as a tool for verifying the range of participants for the purposes of identifying oligopoly in a given period of time (Table 5).

Table 5. Analysis of the dynamics of the Lind Index for the TOP-5 companies

No.	Enterprise	2022	2023	2024	Deviation 2023/2022, bps	Deviation 2024/2023, bps
1	for TOP-2 enterprises, IL2	124.99	378.97	633.62	253.98	254.65
2	for TOP-3 enterprises, IL3	278.23	391.60	510.92	113.37	119.32
3	for TOP-4 enterprises, IL4	392.51	400.83	478.66	8.33	77.83
4	for TOP-5 enterprises, IL5	381.14	339.88	224.17	-41.26	-115.71
5.						

Source: calculated by the author based on data from Table 4

According to Table 5, "disruption of the continuity of indicator L" (Lm + 1 > Lm) was observed at level L5 in 2022-2023. This means that in 2022, the core of the arms market included four most profitable enterprises (LLC "Ukrainian Armoured Vehicles"; PJSC "Motor Sich"; LLC "SPETS-KOM-SERVIS"; JSC "Company of Aviation and Rocket-Technical Machine-Building"), which formed a strong oligopoly. In 2023, the core of the arms market consisted of four enterprises: LLC "Ukrainian Armoured Vehicles"; PJSC "Motor Sich"; LLC "SPETS-KOM-SERVIS"; and PJSC "NVO "Praktyka", with a market type approaching an oligopoly. In 2024, no "disruption of the continuity of the L indicator" was recorded, which means that all five leading enterprises entered the core of the arms market. The next tool for studying the concentration of the Ukrainian arms market was to assess the inequality in the distribution of income among the leading producers in the studied market by calculating the Gini Index (formula (6)) (Table 6).

Table 6. Calculation of the Gini Index for the TOP-13 enterprises, 2023

No.	Enterprise	x_i	y_i	Differentiation index, $\frac{y_i}{x_i}$	$\Sigma(x_i)$	$\Sigma(y_i)$	$x_i y_i$	$x\Sigma(y_i)$
1	LLC "Ukrainian Armoured Vehicles"	0.0769	0.0290	0.3770	0.0769	0.0290	0.0022	0.0022
2	PJSC "Motor Sich"	0.0769	0.0303	0.3939	0.1538	0.0593	0.0023	0.0046
3	LLC "SPETS-KOM-SERVIS"	0.0769	0.0303	0.3939	0.2308	0.0896	0.0023	0.0069

Table 6. Continued

No.	Enterprise	x_i	y_i	Differentiation index, $\frac{y_i}{x_i}$	$\Sigma(x_i)$	$\Sigma(y_i)$	$x_i y_i$	$x\Sigma(y_i)$
4	PJSC "NVO 'Praktyka'"	0.0769	0.0316	0.4108	0.3077	0.1212	0.0024	0.0093
5	JSC "Company of Aviation and Rocket-Technical Machine-Building"	0.0769	0.0329	0.4277	0.3846	0.1541	0.0025	0.0119
6	LLC "Production-Innovation Company "DEVIRO"	0.0769	0.0329	0.4277	0.4615	0.1870	0.0025	0.0144
7	LLC "Screentech"	0.0769	0.0382	0.4966	0.5385	0.2252	0.0029	0.0173
8	LLC "Kyiv Armoured Plant"	0.0769	0.0395	0.5135	0.6154	0.2647	0.0030	0.0204
9	LLC "Scientific-Production Enterprise of Chemical Products"	0.0769	0.0540	0.7020	0.6923	0.3187	0.0042	0.0245
10	LLC "UKROP"	0.0769	0.0634	0.8242	0.7692	0.3821	0.0049	0.0294
11	SE "Design Bureau 'Pivdenne' named after M. K. Yangel"	0.0769	0.0791	1.0283	0.8462	0.4612	0.0061	0.0355
12	LLC "Def C"	0.0769	0.1121	1.4573	0.9231	0.5733	0.0086	0.0441
13	SE "PA Southern Machine-Building Plant named after O.M. Makarov"	0.0769	0.4268	5.5484	1.0000	1.0001	0.0441	0.0769
-	Total	1.0000	1.0001	-	-	-	0.0882	0.2973
	Gini index	**0.4935**						

Source: calculated by the author based on data from Table 4

According to the calculations in Table 6, the Gini index (S) based on the income levels of the top 13 companies in the arms market in 2023 was 0.4935. This indicator reflects the degree of deviation of the actual distribution of income of the top 13 companies in the arms market from the line of their uniform distribution and indicates an income stratification indicator close to the average for the top 13 companies studied. Similarly, the results for 2024 show a slight excess of the average income stratification index of the top 13 companies studied (S = 0.5656765), interpreted by the Gini Index (formula (6). (Table 7).

Table 7. Calculation of the Gini Index for the TOP-13 enterprises, 2024

No.	Enterprise	x_i	y_i	Differentiation index, $\frac{y_i}{x_i}$	$\Sigma(x_i)$	$\Sigma(y_i)$	$x_i y_i$	$x\Sigma(y_i)$
1	SE "PA Southern Machine-Building Plant named after O.M. Makarov"	0.0769	0.0189	0.245774	0.0769	0.0189	0.0014534	0.0014534
2	LLC "Def C"	0.0769	0.0198	0.257477	0.1538	0.0387	0.0015226	0.002976
3	SE "Design Bureau "Pivdenne" named after M.K. Yangel"	0.0769	0.0198	0.257477	0.2308	0.0585	0.0015226	0.0044987
4	LLC "UKROP"	0.0769	0.0207	0.269181	0.3077	0.0792	0.0015918	0.0060905
5	LLC "Scientific-Production Enterprise of Chemical Products"	0.0769	0.0215	0.279584	0.3846	0.1007	0.0016534	0.0077438
6	LLC "Kyiv Armoured Plant"	0.0769	0.0215	0.279584	0.4615	0.1222	0.0016534	0.0093972
7	JSC "Company of Aviation and Rocket-Technical Machine-Building"	0.0769	0.0348	0.452536	0.5385	0.157	0.0026761	0.0120733
8	LLC "Screentech"	0.0769	0.0556	0.723017	0.6154	0.2126	0.0042756	0.0163489
9	PJSC "NVO "Praktyka"	0.0769	0.0644	0.837451	0.6923	0.277	0.0049524	0.0213013
10	LLC "Production-Innovation Company "DEVIRO"	0.0769	0.0652	0.847854	0.7692	0.3422	0.0050139	0.0263152
11	LLC "SPETS-KOM-SERVIS"	0.0769	0.0767	0.997399	0.8462	0.4189	0.0058982	0.0322134
12	PJSC "Motor Sich"	0.0769	0.0792	1.029909	0.9231	0.4981	0.0060905	0.0383039
13	LLC "Ukrainian Armoured Vehicles"	0.0769	0.5018	6.525358	1	0.9999	0.0385884	0.0768923
	Total	1	1	-	-	-	**0.0768923**	**0.2556079**
			Gini Index					**0.5656765**

Source: calculated by the author based on data from Table 4

Thus, in 2023-2024, the income distribution among producers in the Ukrainian arms market was close to average, specifically 0.4935 and 0.5657 respectively. On the other hand, adhering to a functional approach, the absence of systemic economic inequality and stratification deprives economic entities of motivation for economic development and upward mobility (of assets, human resources, innovation, logistical support), as leading enterprises are unable to actively ensure innovative development and scientific research, nor to commercialise technological novelties. The

application of the Gini Index methodology for assessing the concentration of the Ukrainian arms market does not account for the level of shadow economy, which could lead to significant distortion of the real picture of inequality. However, given the state's high interest as a stakeholder in the active development of the sector under study during wartime, the level of the shadow economy in the DIC is expected to be extremely low. The growth rates of revenue for the TOP-5 DIC producers, as shown in Table 3 for the period 2022-2024, do not exceed Ukraine's GDP growth rates during this period, indicating that the country's positive economic growth does not hinder the reduction (mitigation) of income inequality among producers in the Ukrainian arms market and does not cause its deepening. Rational fiscal policy of the state, through instruments such as progressive tax rates and tax benefits, is intended to further reduce (mitigate) inequality.

However, the leaders of the Ukrainian arms market, by the laws of competition, will at some point exert pressure and displace smaller enterprises from the market, which exacerbates inequality (digital, informational) in the arms market. Wartime conditions create demand for arms, leading to an increase in the number of private companies with limited working capital for effective economic activity, outside of state support, access to resources, professional segregation of workers, etc. In such a case, producers in the Ukrainian arms market with low income levels should be classified as institutions of economic development that polarise the Ukrainian arms market (by revenue) and do not impede the restructuring of the Ukrainian market towards eliminating market asymmetries. For example, this refers to asymmetries in the levels of economic, institutional, or technical and technological achievements. Consequently, an exacerbation of intra-industry imbalances and an increase in structural disproportions in the Ukrainian arms market, which hinder innovative development, will be observed.

If the state of economic stability (post-war period) and the functioning of all registered enterprises in the Ukrainian arms market are considered, and thus the restoration of enterprises' ability to carry out export activities, then the studied group of 13 leading DIC enterprises will create the largest part of inequality, and, in the context of assessing the competitive state of the Ukrainian arms market, may adversely affect the overall competitive state. For example, by applying high prices or retaining technological and other types of innovations. This could lead to a limitation of choice for consumer organisations and a loss of competition in the Ukrainian arms market. However, during wartime, under conditions of exclusive application of tender trade and socially responsible business, the expectation of loss of competition in this market is minimised.

During the period of economic uncertainty, the Ukrainian arms market, from the perspective of assessing concentration levels, has been under-researched. Instead, the dominant majority of scientific research has focused on studying trends in the arms market's development and influencing factors, as well as institutional functions in the context of ensuring security. Among the studies on the problems of developing the Ukrainian arms market and its place in the global arms market, the works of scholars such as V.M. Behma & N.M. Skliar (2014) should be highlighted, who identified the content and specifics of the complex of economic and legal risks of export control from the perspective of the state's military-economic security. The authors revealed the positive and negative aspects of Ukraine's export control system. Factors for the emergence of risks in the organisation of export control, their potential threats, and the possibility of influencing the level of defence financing were identified.

N.E. Avanesova (2016) provided definitions of risks and main threats to the economic security of Ukraine's defence industry. The author identified factors for the emergence of risks and threats to the economic security of the defence industry in the process of creating a mechanism for preventing the negative consequences of globalisation and their neutralisation. S.V. Haidu (2023) outlined the content of the state's political function in conditions of increased external and internal threats during martial law, outlined the prerequisites for institutionalisation and the need for forming legal practices of Ukraine's proactivity in terms of influencing the global information space with clear and unified narratives, and intensifying the use of public diplomacy instruments on the path to ensuring the stability of its development.

T. Kim *et al.* (2022) investigated the global arms market and stated that the production and sale of weapons, and the provision of military services worldwide, constitute a fairly concentrated and monopolised sphere of the world economy, but they did not conduct a quantitative assessment of the global arms market using index methods. O. Sokhatskyi (2020) argued for the specifics of asymmetric wars and the use of not only classical political and military methods and tools for their resolution, but also unconventional influencing factors, which include informational, economic, sociological influence, etc. The author notes that the basis for solving this problem is, first of all, a re-evaluation of the essence of international conflicts and the peculiarities of their manifestation in modern conditions, research into the components of military expenditures, and their role in ensuring the country's defence capability in the new realities.

J.P. Dunne & R.P. Smith (2016) investigated the arms market in the period 1990-2013 and identified it as relatively unconcentrated compared to other industries, due to internal preferences when national governments make procurements. The authors summarised that in the near future, Russia and China could pose serious international competition to the USA as the largest player in the global arms market and noted that economic forces contribute to increased competition, however, the result of concentration is determined precisely by political forces in the industry. According to the authors' research, the shares of the five largest arms manufacturers in 1990-2011 grew from 22% to 43% in 1999, and then decreased to 35% in 2011. The share of the 20 largest companies increased from 58% to 74% and then

decreased to 68%. During the period 1990-2001, the HHI concentration index in the arms market more than doubled – from 200 to 500, after which it decreased again. In 2011, the HHI was similar to 1996 and stood at 350, equivalent to 28 firms. The authors concluded that the observed changes in concentration in the defence industry followed the rise and fall of demand in an industry with high fixed costs.

L. Scarazzato *et al.* (2024) studied the concentration of the TOP-100 global arms producers and noted that the Herfindahl-Hirschman Index, after peaking in 2002 at 500 (when assessing company shares as percentages), began to decline and reached a minimum value of 300 in 2017 under the influence of a significant wave of consolidation (excluding China) that began in the 1990s. Further decline is explained by J.P. Dunne & R.P. Smith (2016) as a probable result of the increasing significance of new arms manufacturers globally. The levelling of Herfindahl-Hirschman Index values in 2015 could have been related to the emergence of Chinese companies. Since 2018, the Herfindahl-Hirschman Index has again begun to grow, despite the lack of data on arms production by Russian manufacturers. The authors concluded that arms sales revenues in 2022 for the TOP-100 producers showed a decline, contrary to expectations caused by increased geopolitical tension and the anticipated need for countries to replenish and modernise their military equipment. It is expected that from 2023 onwards, global military expenditures will increase (Tian *et al*., 2024). The authors note that the unprecedented growth in military expenditures is a direct response to the global deterioration of peace and security, as priorities for military power create risks of forming action-counteraction spirals in conditions of further exacerbation of the geopolitical situation and security. F. Dorn *et al.* (2024) note that geopolitical risks affect the resilience of economies through increasing needs for issuing new debt obligations or raising taxes to finance the continuous growth of defence expenditures. The authors note that many European countries received significant peace dividends after the end of the Cold War. During the same period, welfare states grew to an extent that was not supported by overall economic development. Furthermore, in an economically challenging environment, European governments face trade-offs as they also need to invest in transforming their economies and making them more competitive, which complicates the dilemma in resolving trade-offs to maintain an increased level of military expenditure.

H. Duginets & K. Nizheiko (2024) noted that the international arms market is characterised by a high level of transnationalisation, and the problem of data latency regarding the real scale of production and trade. Price competition among arms manufacturers can be detrimental, and monopolistic market structures may be optimal. The authors noted a strong national bias, and viewed the trend towards globalisation (as a decrease in bias towards the country of origin) as a factor influencing the decrease in the number of companies in the military sector and the growth of concentration.

The deterioration of global security against the backdrop of major armed conflicts, the growth of global military expenditures, environmental disturbances, and other challenges put pressure on international stability and intensify confrontation between major powers. Disputes about the form of international order depend on the balance between the legitimacy of its rules and norms, as well as the distribution and exercise of power. As S.T. Wezeman (2024) noted, the international order is designed to regulate and limit armed conflicts, but the effectiveness of its implementation is weakened by both disagreements and rivalries between leading powers, and the specifics of many modern conflicts, as well as the actions of key governments and their leaders. The author determined that the path to developing international order must be based on the high effectiveness of international institutions and international humanitarian law, at the core of which cooperation must become a key element of security.

Since arms production is most often carried out by companies involved in both military and civilian production, it has some unique characteristics that distinguish it from other types of production. Firstly, it is the production of means of violence, which has led to it being under a higher level of state control and regulation than other types of production. Secondly, although to some extent the military industry operates under the same economic conditions as the industrial sectors of which it is a part, the fact that the government of the country of origin is the sole or primary buyer of many products leads to a monopsonistic market and special government-industry relations, which have given the military industry quite different characteristics from those of commercial production.

CONCLUSIONS

According to the results of a study of 13 leading enterprises of the Ukrainian defence-industrial complex (DIC), there will be a high concentration of production in 2023 and further growth in the concentration of arms production in 2024 (as identified by the Herfindahl-Hirschman Index, which was 2,167.63 and 2,791.384 in 2023-2024, respectively).

Analysis and assessment of the stratification of their incomes indicated moderate income inequality in 2023 and a slight increase in income inequality among leading producers in 2024 (as the Gini Index was 0.4935 in 2023 and 0.5656765 in 2024). The composition of the core arms market remained unchanged in 2022-2023, consisting of four leading companies, which indicated a stabilisation of competition in 2022-2023. However, in 2024, competition in the sector intensified, allowing the fifth largest company in terms of market share to enter the core of the arms market.

Six leading enterprises of the Ukrainian defence industry in 2023 and five leading enterprises in 2024 were recognised as strategic in terms of performance dynamics. However, when identifying further strategic areas of cooperation with groups A and B, it is necessary to take into account significant factors influencing the closeness of cooperation, such as "bottlenecks" in the logistics of

ensuring the quality of processes and the quality of defence products, the need to form a pricing policy based on the concept of institutionalising marketing (when forming international cooperation), levels of state regulation of the sector, trends in the development of defence tender procurement, marketing strategies of arms manufacturers taking into account the concept of partnership marketing, etc. The individualisation of cooperation strategies with each of the A, B, and C groups of arms manufacturers, based on a systematic approach, should be based on the principles of monitoring and proactive response in accordance with market changes, state needs, and the requirements of arms consumers.

The increase in the share of private enterprises in the structure of the defence industry and the competitive pressure of the top five leaders in the Ukrainian arms market pointed to the growing influence of economic motivation for the production and sale of weapons in Ukraine. Since low-income producers in the Ukrainian arms market are classified as economic development institutions that polarise the Ukrainian arms market and create new market asymmetries, a further exacerbation of intra-industry imbalances and structural disparities has been noted. The asymmetry between the contractual volumes of state orders and the production capacities of enterprises was exacerbated by the underdevelopment of the logistics infrastructure, which limited the speed of supplying military units with equipment and resources. Separately, a shortage of qualified personnel and dependence on imported components were noted. Further research could include a qualitative and quantitative assessment of the risks of marketing and logistics activities of participants in the Ukrainian arms market in order to eliminate potential obstacles when developing effective strategies for promoting their products on the international arms market.

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Олена Шандрівська
Кандидат економічних наук, доцент
Національний університет «Львівська політехніка»
79000, вул. Степана Бандери, 12, м. Львів, Україна
https://orcid.org/0000-0002-4335-2423

Дослідження конкурентного середовища підприємств на ринку озброєнь України

Анотація. Зростаюча роль конкурентного середовища у формуванні стратегічної стійкості підприємств оборонно-промислового комплексу України в умовах воєнного стану зумовлює потребу в його ґрунтовному аналізі. Метою дослідження було визначити особливості ринкової кон'юнктури у сфері виробництва озброєнь і провести оцінку конкурентного середовища національних підприємств. У роботі було застосовано методи порівняльного аналізу, статистичного оцінювання, синтезу та наукового узагальнення. Джерельну базу становили офіційні статистичні дані SIPRI (Стокгольмський міжнародний інститут дослідження проблем миру, дані щодо виторгу українських продуцентів озброєнь при використанні української аналітичної онлайн-платформи Clarity Project. Встановлено, що у 2023 році індекс Херфіндаля-Хіршмана для тринадцяти провідних підприємств Оборонно-промислового комплексу України (ОПК) склав 2167,63, що свідчило про високу концентрацію виробництва. Індекс Джинні за показниками доходів цих компаній досяг рівня 0,4935, вказуючи на помірну нерівномірність їх розподілу. Склад ядра українського ринку озброєнь у 2023 році відносно 2022 року залишився незмінним. До його складу увійшли чотири провідні підприємства, що засвідчило стабілізацію конкурентної боротьби у 2022-2023 рр. У 2024 році індекс Херфіндаля-Хіршмана для тринадцяти лідерів ОПК склав 2791,384, що засвідчило зростання концентрації виробництва. Індекс Джинні (за доходом) для підприємств-лідерів зріс до показника 0,5656765, засвідчуючи незначне зростання нерівномірності їх розподілу. Було зафіксовано зміну складу ядра ринку: у порівнянні з 2023 роком до нього увійшло п'яте за часткою ринку озброєнь підприємство, що свідчило про посилення конкуренції. Також було виявлено асиметрію між контрактними обсягами державних замовлень та виробничими можливостями підприємств. Логістична інфраструктура залишалася недостатньо розвиненою, що обмежувало швидкість забезпечення військових частин технікою та засобами. Окремо було зафіксовано дефіцит кваліфікованих кадрів і залежність від імпортних комплектуючих. Результати дослідження можуть бути використані в оборонному плануванні, для вдосконалення механізмів державних закупівель та координації співпраці з міжнародними партнерами у сфері безпеки й озброєнь

Ключові слова: глобальна нестабільність; безпека; оборонна промисловість України; концентрація; сегментна структура; контрактування замовлень; військові витрати

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Elshan Orujov*
PhD in Economics
Baku Business University
AZ1122, 88A H. Zardabi Str., Baku, Azerbaijan
Azerbaijan University
AZ1007, 71 Jeyhun Hajibeyli Str., Baku, Azerbaijan
https://orcid.org/0009-0005-0996-912X

Strategic trade alignment and sovereign flexibility: Azerbaijan's WTO accession dilemma in a shifting global order

Abstract. Azerbaijan's potential accession to the World Trade Organisation (WTO) was highly relevant, as it reflected the broader challenge of reconciling economic modernisation with the preservation of sovereignty in a rapidly shifting global and regional context. The purpose of this study was to explore Azerbaijan's path towards WTO accession as a case study of how emerging economies sought to reconcile multilateral trade commitments with the protection of Azerbaijan's strategic sectors. The research employed a mixed-methods approach, combining qualitative analysis of trade and political economy documentation with comparative benchmarking against post-Soviet states that had already undertaken accession. The findings showed that WTO membership held the potential to promote long-term diversification of the Azerbaijan's economy, strengthen investor confidence, and enhance transparency in regulatory frameworks. However, accession commitments were also likely to limit the government's capacity to apply protective measures in sensitive sectors, particularly agriculture, energy, and services. The analysis revealed that Azerbaijan's accession choices were not exclusively economic; they were shaped by evolving regional alliances, fluctuations in hydrocarbon markets, and pressures from global trade liberalisation. To capture these tensions, the study proposed the conceptual framework of "strategic trade alignment and sovereign flexibility", which explained Azerbaijan's cautious stance in negotiations. The results of the research could be applied by trade negotiators in formulating strategies for accession that achieve integration into the global economy while maintaining adaptive governance mechanisms

Keywords: trade policy; economic sovereignty; post-Soviet integration; regional economic shifts; strategic dilemma

INTRODUCTION

Azerbaijan's potential accession to the World Trade Organisation (WTO) represents a critical juncture in its economic and political development. The process encapsulates a delicate balance between the aspiration to join the global trading system in order to stimulate diversification and attract foreign investment, and the necessity to retain sovereign flexibility in shaping national policies. This dilemma is particularly evident in strategically important sectors such as energy and agriculture, where integration promises long-term gains but also carries the risk of reducing policy autonomy. The debate surrounding Azerbaijan's accession to WTO has become increasingly significant due to structural vulnerabilities in the national economy and mounting pressures from global economic realignments. The country's dependence on hydrocarbons, combined with shifting geopolitical alliances in the South Caucasus, underscored the need to evaluate both the opportunities and risks associated with WTO membership. This issue demanded scholarly attention not only because of its implications for Azerbaijan's economic trajectory, but also because it exemplified the

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*Corresponding author

broader dilemmas faced by resource-rich emerging economies seeking deeper integration into global governance frameworks while preserving sovereign policy flexibility.

Researchers S. Neset *et al.* (2023) examined the changing geopolitics of the South Caucasus after the Second Karabakh War, emphasising how Azerbaijan's military victory and stronger regional position reshaped the dynamics of trade and cooperation. They argued that unresolved conflicts and tensions between Azerbaijan, Armenia, and other actors significantly complicated cross-border economic interaction. Instead of fostering integration, security challenges and rivalries constrained reforms and limited the region's potential for deeper trade engagement. F. Nahmadova (2023) examined whether Azerbaijan's accession to the WTO would facilitate deeper integration into the "Middle Corridor" within China's Belt and Road Initiative. She found that the benefits of exporting to China were limited by the application of the General Tariff Rate and concluded that WTO membership could help remove these barriers and unlock the potential advantages of regional trade integration. G. Arveladze & M. Smeets (2017) studied Georgia's post-accession reforms, arguing that early liberalisation in the 2000s fostered foreign investment but exposed the agricultural sector to structural shocks. They emphasised that, after WTO accession, sustaining reform momentum required complementary policies to strengthen institutional capacity and social safety nets. Although not a full WTO accession case, the study highlighted that international trade agreements significantly reshaped Turkey's industrial structure and trade patterns over time. These comparative insights suggested that accession outcomes were neither uniform nor predetermined, but contingent on national strategies.

R. Wilkinson (2013) highlighted the institutional crisis of the WTO itself, noting that disputes over consensus-based decision-making and the paralysis of the Appellate Body have undermined its effectiveness. J. Bacchus (2024) suggested that only far-reaching reforms and renewed global rules can restore its legitimacy. Collectively, these studies raised critical doubts about whether WTO accession can still deliver the same economic and political benefits for smaller states that it once did two decades ago. Z. Drábek (2024) examined the vulnerabilities of the multilateral trading system and argued that the WTO faces systemic threats that undermine its credibility and effectiveness. His analysis underscored how growing protectionism, disputes over institutional reform, and the rise of regional trade arrangements have raised doubts about the WTO's ability to deliver predictable outcomes. Integration of this perspective highlighted that Azerbaijan's prospective accession would not occur in a stable environment, but rather against the backdrop of a fragmented and contested global trade order.

Despite these contributions, key gaps remained in the literature. Few studies directly addressed Azerbaijan's unique resource-driven economic model in relation to WTO accession. Additionally, while comparative analyses existed, there had been limited effort to systematically benchmark Azerbaijan's accession path against a diverse range of post-Soviet cases. Most importantly, above papers had not adequately conceptualised the trade-off between "strategic trade alignment" and "sovereign flexibility", leaving a gap in theoretical framing that this study sought to fill. The purpose of this study was to examine Azerbaijan's WTO accession process as a case study of how emerging economies balance commitments to the multilateral trading system with the need to safeguard strategic sectors.

MATERIALS AND METHODS

This study was based on an interpretivist research paradigm, which allowed for a contextualised understanding of Azerbaijan's approach to WTO accession within its political and institutional environment. To guide the analysis, elements of strategic trade theory (Brander & Spencer, 1985) and sovereignty-responsiveness theory (Keohane, 2002) were considered. These theoretical traditions were used to frame the investigation of how state-led economic strategies interacted with external commitments, and how sovereignty considerations influenced the negotiation process. The research materials consisted of primary sources from Azerbaijan (World Bank, 2023a; 2023b; n.d.a; n.d.b), Georgia, Kazakhstan, and Kyrgyzstan, along with secondary analytical studies. International legal and institutional texts included WTO Working Group reports (World Trade Organisation, n.d.a; n.d.b; 2021; 2023a; 2023b). These were selected to capture the formal obligations and negotiation dynamics of the accession process. At the national level, core policy documents such as Strategic Roadmap for development of logistics and trade in the Republic of Azerbaijan (2017) was reviewed in order to assess the degree of alignment with WTO principles and to identify areas of potential divergence.

Secondary sources included academic studies and reports that provided comparative perspectives on accession experiences in Azerbaijan (Orujov, 2025), Georgia (Arveladze & Smeets, 2017), Kazakhstan (WTO Notifications Portal, n.d.b), and Kyrgyzstan (World Trade Organisation, 2021). These papers informed the benchmarking exercise that situated Azerbaijan's case within a broader regional and institutional context. To ensure reproducibility, all references to academic and institutional sources were drawn from published materials with clear bibliographic information. For empirical analysis, the study employed both cross-sectional and longitudinal data. Macroeconomic indicators were collected from internationally recognised databases, including the World Bank (2023a; 2023b; 2024), UNCTAD (2023), and the World Integrated Trade Solution (2022). The variables extracted included gross domestic product (GDP), tariff rates, foreign direct investment (FDI) flows, and revealed comparative advantage (RCA) scores. These datasets were selected because they provided both cross-country comparability and adequate temporal depth to assess Azerbaijan's evolving trade profile over the past two decades. This empirical foundation informed the development of the Sovereignty-Trade

Integration Matrix (STIM), which captures sector-level trade-offs. To assess Azerbaijan's position in the broader regional and development context, three WTO member countries were selected for comparison: Georgia, Kazakhstan, and Kyrgyzstan. They were selected based on a shared historical heritage and variations in accession strategies. Their experiences were benchmarked using pre- and post-accession economic indicators and institutional responses to WTO compliance requirements.

A combination of trade indices and simulations was employed to assess Azerbaijan's trade policy dynamics. The methodology included an analysis of tariff dispersion and RCA. Specifically, Azerbaijan's tariff structures between 1995 and 2023 were examined to identify variability across sectors and the presence of tariff peaks, while RCA analysis was applied to evaluate sectoral competitiveness. In addition, a WTO-compatible partial equilibrium SMART simulation was conducted to model potential trade flows under three distinct scenarios: full liberalisation with all MFN-bound tariffs applied, selective sector exemptions such as agro-chemicals and petro-refined goods, and a transitional liberalisation path with phased reforms over five to ten years.

Despite the comprehensive mixed-methods approach adopted in this study, several limitations constrained the breadth and generalisability of the findings. Access to primary and confidential negotiation documents related to Azerbaijan's WTO accession was restricted, limiting the ability to analyse the real-time evolution of negotiation strategies and state positions in detail. As a result, much of the analysis relied on publicly available summaries, secondary sources, and expert interpretations, which may omit nuanced diplomatic dynamics or informal trade-offs made behind closed doors. The economic indicators for the countries studied after their accession to the WTO covered the period from 2020 to 2024 inclusive.

RESULTS AND DISCUSSION

The research findings reveal a complex interplay of economic, institutional, and strategic trade factors shaping Azerbaijan's WTO accession posture. The results underscore the coexistence of high integration potential with persistent concerns over sovereign control, particularly in sectors where state influence remains significant, such as energy and agriculture. These findings highlighted that WTO accession in the post-Soviet space was not a uniform process but rather reflected varying degrees of bargaining capacity, sectoral vulnerability, and political willingness to integrate into the global trade regime. Azerbaijan's approach appeared shaped by lessons drawn from its neighbours: caution against overexposure (as in Georgia), recognition of negotiation length as a policy tool (as in Kazakhstan), and awareness of the need to balance openness with sovereignty (as in Kyrgyzstan). The simulation, adapted from UNCTAD's SMART model, provides a detailed assessment of potential trade outcomes for Azerbaijan under different liberalisation scenarios. Under a scenario of full liberalisation, in which all MFN-bound tariffs are applied without exemptions or transitional measures, the results indicate a significant increase in non-oil imports, projected at approximately 12.7%. This rise reflects the combined effect of tariff reductions across multiple sectors, which would lower import costs and enhance the competitiveness of foreign goods in the Azerbaijani market. The model highlights that while trade openness may bring efficiency gains, certain national sectors could face challenges. In particular, the agricultural sector is projected to experience a contraction in output of around 4.9% under full liberalisation if it does not receive compensatory measures such as subsidies or adaptation funds. This finding underscores the potential vulnerability of sectors that are less competitive internationally and emphasises the importance of carefully calibrated national support mechanisms when implementing broad trade liberalisation policies (Brander & Spencer, 1985).

When a selective exemption approach is applied, allowing targeted sectors such as agro-chemicals and petro-refined goods to maintain protective measures while other sectors liberalise, the model predicts a more moderate but strategically significant outcome. Specifically, Azerbaijan could achieve a 5.3% growth in export diversity under this scenario, reflecting a broader range of products gaining competitiveness in international markets (Centre for Analysis of Economic Reforms and Communication, 2024). The selective exemption scenario therefore not only mitigates potential losses in sensitive sectors but also supports diversification of the country's export basket, enhancing resilience to external shocks and improving the alignment of trade policy with national development objectives. Overall, the SMART simulation results provide crucial insights for policy-making and trade negotiations. They demonstrate that full liberalisation would substantially increase non-oil imports but may impose sector-specific costs if domestic adjustments are not implemented. Conversely, selective exemptions can preserve the stability of vulnerable industries while promoting export diversification, suggesting that Azerbaijan's negotiating strategy in WTO accession or trade reform processes should consider carefully targeted carve-outs for critical sectors. These findings, taken together, form a comprehensive evidence base for understanding the potential economic impacts of different liberalisation pathways and for designing policies that balance market openness with sectoral protection and strategic economic development objectives.

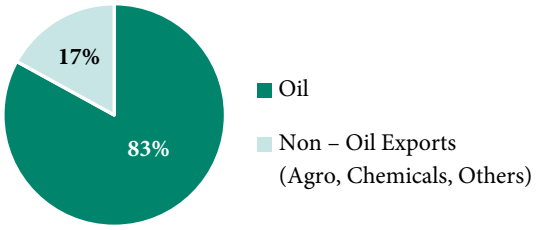

Figure 1. Azerbaijan's export structure by sector (2024)
Source: compiled by the author based on Centre for Analysis of Economic Reforms and Communication (2024)

Figure 1 illustrates Azerbaijan's export structure by sector for 2023, providing context for the simulation outcomes and highlighting the relative weight of key industries in the overall export portfolio. These insights inform Azerbaijan's negotiation preferences for sectoral carve-outs. Figure 1 illustrates the composition of Azerbaijan's export economy in 2023, highlighting a persistent reliance on hydrocarbons. Approximately 83% of all exports are derived from oil and gas products, while only 17% represent non-oil exports, which include agriculture, chemicals, textiles, and manufactured goods. This imbalance reveals the core vulnerability in Azerbaijan's economic model: its overdependence on energy commodities subjects the country to price volatility in global oil markets and constrains its leverage in trade negotiations (Strategic Roadmap for…, 2017). Research by K. Abdullayev *et al.* (2024) highlighted that digital transformation is increasingly seen as a driver of competitiveness and resilience in national economies, particularly in transition countries. For instance, WTO accession requires commitments to liberalise and diversify trade. However, given the current structure, Azerbaijan faces a steep challenge in meeting diversification benchmarks without incurring sectoral disruptions. Comparatively, post-accession countries such as Georgia have shifted their export profiles toward light manufacturing and services. For Azerbaijan, reducing hydrocarbon dependence is not just a policy objective but a necessity to secure long-term economic stability and resilience within the WTO framework. The figure emphasises the urgency for a proactive export diversification strategy prior to accession, particularly by incentivising investments in non-energy sectors, introducing technology transfers, and reducing barriers for SMEs involved in trade. The overwhelming reliance on hydrocarbons exposes Azerbaijan to commodity price shocks. WTO accession could accelerate diversification via enhanced regulatory standards, trade facilitation, and investor signalling. However, as R. Hausmann *et al.* (2007) argued, trade liberalisation alone is insufficient without complementary industrial policies.

A composite index was constructed to assess Azerbaijan's progress in implementing WTO-compatible reforms, drawing on WTO accession inventory checklists, OECD (2023) governance indicators, and World Bank Doing Business scores (pre-2022) (Kaufmann *et al.*, 2023). The results indicate that Azerbaijan performs strongly in areas such as customs modernisation and intellectual property rights (IPR) reforms, reflecting the introduction of new enforcement laws aligned with the TRIPS agreement. These reforms have significantly improved the efficiency and transparency of customs procedures, reduced procedural delays, and strengthened legal protections for intellectual property, thereby enhancing investor confidence and facilitating trade. In contrast, the country demonstrates a medium level of progress in services liberalisation, indicating partial but uneven opening of key service sectors to international competition. While regulatory frameworks and market access provisions have been updated in some areas, restrictions remain in others, limiting the full potential of service sector growth and cross-border integration. Ultimately, Azerbaijan scores relatively low in sanitary and phytosanitary (SPS) and technical barriers to trade (TBT) regulatory infrastructure, highlighting ongoing gaps in quality standards, inspection capacity, and compliance monitoring. These deficiencies may pose challenges for export diversification, particularly in agriculture and processed food products, and underscore the need for targeted investment in institutional capacity and technical expertise to meet international trade norms. This suggests a readiness gap in institutional enforcement and food safety, necessitating transitional periods or technical assistance programmes. Figure 2 compares Azerbaijan's WTO compliance performance with three regional competitors – Georgia, Kazakhstan, and Kyrgyzstan.

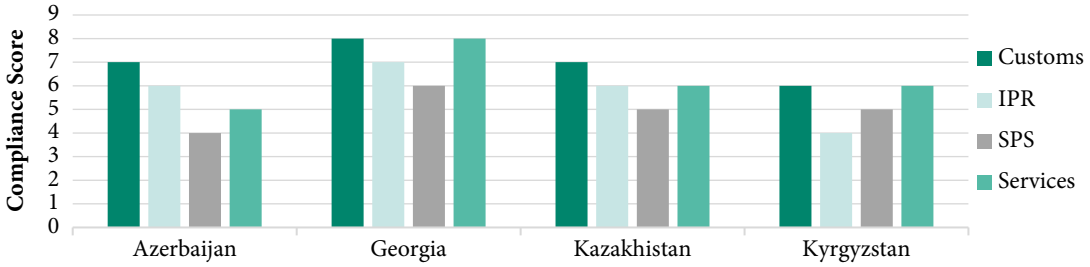

Figure 2. WTO Compliance Index – Azerbaijan vs comparator countries (2023)
Source: compiled by the author based on World Trade Organization (n.d.a; n.d.b; 2021; 2023a; 2023b)

Azerbaijan scores moderately well (7/10), indicating partial alignment with WTO standards on customs valuation and transparency. However, gaps remain in risk-based inspection and digital customs clearance. Georgia leads with an 8/10 score due to its full adoption of single-window systems and WCO-compatible procedures. IPR: With a 6/10 score, Azerbaijan has introduced updated legal frameworks, but enforcement mechanisms remain weak. In contrast, Georgia's higher score reflects effective dispute resolution mechanisms and cooperation with WIPO, while Kazakhstan benefits from harmonisation with EAEU standards. Kyrgyzstan scores lower overall, reflecting ongoing challenges in aligning with WTO standards. Customs and services show moderate performance (6/10), while IPR enforcement remains weak (4/10). SPS measures are improving (5/10), but gaps persist in meeting

international standards. SPS is Azerbaijan's weakest area (4/10). SPS measures are critical for agricultural exports, and non-compliance hampers access to high-standard markets. Regulatory alignment with Codex Alimentarius and capacity-building for veterinary services are essential pre-accession steps. Azerbaijan's services liberalisation stands at 5/10, hindered by monopolistic structures in telecoms and restrictive licensing in finance. Georgia again outperforms, having opened its services sector significantly post-accession. Overall, the Figure 2 underscores Azerbaijan's uneven readiness and identifies specific regulatory gaps that require targeted reforms to meet WTO accession benchmarks. The variation among countries also highlights how accession trajectories can be shaped by domestic political will and institutional capacity. Table 1 summarises the five-year economic impact of WTO accession in three comparator countries, providing a valuable reference point for evaluating Azerbaijan's prospective outcomes.

Table 1. Post-WTO accession economic performance (5-year snapshot)

Country	GDP growth (%)	FDI inflows (USD B)	Export diversification index	Policy adaptation score
Georgia	5.2	3.6	0.74	High
Kazakhstan	3.4	4.9	0.56	Medium
Kyrgyzstan	6.2	4.7	0.38	Medium

Source: compiled by the author based on World Bank (2023a; 2023b; 2024), UNCTAD (2023), World Integrated Trade Solution (2022), World Trade Organisation (2021; 2023a; 2023b), WTO Notifications Portal (n.d.a; n.d.b; n.d.c)

The export diversification index is calculated using a Herfindahl-Hirschman Index (HHI) transformation, where lower values indicate better diversification. Georgia's open-market accession fostered structural transformation, while Kazakhstan secured moderate FDI with policy flexibility. Kyrgyzstan's market-oriented reforms attracted capital inflows, but systemic diversification remains limited. Azerbaijan's path must consider these trade-offs, balancing economic benefits against political costs. Post-WTO accession, Georgia experienced the highest GDP growth at 5.2%, driven by liberalisation-led productivity gains and improved investor confidence. Kazakhstan's growth was more moderate at 3.4%, reflecting a cautious approach with gradual sectoral reforms, while Kyrgyzstan's growth reached 6.2%, supported by targeted reforms and rising investment in key sectors. Kyrgyzstan attracted FDI inflows of USD 4.7 billion, reflecting growing investor confidence, though diversification of the economy remains limited. Georgia and Kazakhstan received moderate but sustained FDI, reflecting investor confidence in predictable trade rules and institutional reforms. In terms of export diversification, Georgia led with a score of 0.74, indicating successful post-accession reorientation, whereas Kazakhstan and Kyrgyzstan remained more reliant on a narrow range of exports. Policy adaptation, reflecting the pace and depth of domestic reforms, was highest in Georgia, demonstrating full alignment with WTO norms, while Kyrgyzstan's medium score indicates ongoing reform efforts with room for improvement. The comparative synthesis of post-WTO accession economic trajectories among Georgia, Kazakhstan, and Kyrgyzstan provides further context for Azerbaijan's cautious stance, as Georgia's strong GDP growth and high policy adaptation score contrast with Kyrgyzstan's more moderate performance in export diversification and institutional flexibility, suggesting that the success of WTO accession is less a function of membership per se and more contingent on how well institutional reforms, strategic sector protections, and national policy coherence are integrated into the accession framework, a theme that emerged repeatedly in interviews with Azerbaijani stakeholders who emphasised the need to avoid a purely formalistic accession in favour of a carefully sequenced, strategically aligned integration model (World Trade Organisation, 2023a).

The Table 1 above signals that WTO accession alone is not sufficient to guarantee economic transformation. The outcomes are strongly mediated by how effectively countries adapt policy frameworks, build regulatory institutions, and pursue structural reforms. Azerbaijan must ensure that accession is part of a broader strategy of inclusive economic modernisation. Sectors such as customs and manufacturing offer high returns under WTO accession due to improved competitiveness and investor interest, with limited sovereignty loss. In contrast, energy and agriculture – central to political patronage networks – entail high sovereignty risks. This supports an accession strategy that includes transitional clauses and targeted exemptions in these sectors (Hoekman & Mavroidis, 2015). To visualise sectoral trade-offs, Table 2 models Azerbaijan's expected gains from integration against sovereignty costs.

Table 1. Sovereignty-trade integration matrix (STIM)

Policy domain	Integration gain	Sovereignty cost	Net policy trade-off
Agriculture	Medium	High	Negative
Energy	Low	High	Negative
Manufacturing	High	Medium	Positive
Services	High	Medium	Positive
Customs/Procedures	High	Low	Strongly Positive

Source: compiled by the author

This matrix models the trade-off Azerbaijan faces in different policy domains when negotiating WTO accession. It assesses each domain based on expected integration gains (market access, trade facilitation, FDI attraction) and the sovereignty cost (loss of autonomous policy space, regulatory constraints). WTO accession presents varied trade-offs across Azerbaijan's economic sectors. In agriculture, the sovereignty cost is high due to disciplines on subsidies, price supports, and SPS measures, and despite moderate integration benefits such as better access to EU and CIS markets, the overall effect is negative for small-scale farmers facing global competition. In the energy sector, WTO rules on pricing, transit, and competition could constrain national policy levers, while integration gains remain low since exports are already well-established through pipelines and long-term contracts, making this area highly sensitive. Manufacturing offers significant potential for industrial development through supply chain integration, technology transfer, and reduced input costs; although some policy space is compromised, the trade-off is net positive if industrial policy aligns with WTO-compatible incentives. Liberalisation in services, including ICT, banking, and transport, can attract investment and foster innovation, with moderate sovereignty costs, producing a positive overall effect if phased liberalisation is implemented. Customs and procedures represent the least controversial area, as WTO-compliant reforms are low-cost in terms of sovereignty while delivering high integration benefits such as reduced transaction costs, faster border clearance, and improved compliance scores in global rankings. Furthermore, Table 2 offers a structured overview of sector-specific policy trade-offs under different accession scenarios, clearly showing that while gains in manufacturing, services, and customs procedures are likely to be high with low-to-moderate sovereignty costs, sectors like agriculture and energy are expected to experience high sovereignty costs with relatively lower integration gains, thus justifying the state's guarded approach in negotiations and its preference for transitional compliance rather than immediate liberalisation, especially in politically sensitive sectors tied to national development goals and public welfare. This Table 2 provides a practical tool for negotiators and policymakers to prioritise sectors for phased liberalisation, argue for transition periods, and maintain red lines in sensitive areas. Azerbaijan could seek extended exemptions in agriculture and energy, while front-loading commitments in customs and services to signal reform intent.

The quantitative assessment employed SMART simulations and RCA indicators to evaluate Azerbaijan's trade structure. Findings indicate that the hydrocarbon sector dominates export volume and partner concentration, with oil and gas accounting for approximately 83% of total exports in 2023. SMART simulations suggest that under full WTO tariff harmonisation, non-oil imports could increase by 12.7%, while agricultural competitiveness may contract by 4.9% in the absence of targeted subsidies or transitional measures. This highlights the risk that accession without calibrated sequencing may exacerbate sectoral disparities and threaten rural livelihoods (Table 3).

Table 3. Azerbaijan's export concentration and hydrocarbon dependence (2013-2023)

Sector	Share of total exports (%)	RCA	HHI (10-year average)
Hydrocarbons	83	3.5	0.65
Agriculture	5	0.8	0.02
Manufacturing	12	1.1	0.10

Note: HHI – Hirschman-Herfindahl Index; RCA – revealed comparative advantage
Source: compiled by the author based on World Trade Organisation (n.d.b), State Statistical Committee of the Republic of Azerbaijan (n.d.), World Bank (2023b)

Analysis of the HHI confirms limited diversification over the past decade, remaining above 0.65. While nominal non-oil exports have grown modestly, structural dependency on hydrocarbons persists. Institutional actors recognise the benefits of WTO accession, including improved investor confidence, dispute settlement mechanisms, and alignment with global trade norms. However, regulatory and ministerial bodies express strong caution over ceding control in sensitive areas such as state procurement, food security, and energy pricing – key instruments of political legitimacy and social stability. Analysis of Azerbaijan's Memorandum on the Foreign Trade Regime (MFTR) and Working Party discussions indicates that the state consistently advocates for special and differential treatment, including extended transition periods, flexible tariff schedules, and sectoral exemptions (Keohane, 2002). The Table 4 illustrates that Azerbaijan's prospective strategy aligns more closely with Kazakhstan's "middle path" than Georgia's rapid liberalisation, reflecting a balance between global integration and national control.

Post-accession performance data from Georgia, Kazakhstan, and Kyrgyzstan suggest that gradualists like Kazakhstan and Kyrgyzstan achieved more balanced GDP growth and export diversification than Georgia, which, despite rapid liberalisation, faced institutional strain in enforcing commitments due to limited bureaucratic capacity. Triangulation of quantitative trade data and qualitative policy insights shows that Azerbaijan's accession dilemma is shaped by both structural economic dependencies and institutional ambivalence. High export concentration in hydrocarbons underscores the need for sector-specific protections, while qualitative evidence

confirms that Azerbaijan's authorities prioritise maintaining political leverage through selective intervention in strategic sectors. Comparative analysis demonstrates that Georgia's liberal approach offers lessons in rapid integration but illustrates risks of institutional overload, while Kazakhstan's phased accession serves as a template for balancing WTO obligations with domestic priorities. Kyrgyzstan's long negotiation process highlights the impact of limited institutional capacity and targeted sectoral resistance on accession outcomes. Azerbaijan's likely path mirrors Kazakhstan's "middle way", with a mix of strategic concessions, transition periods, and sectoral exemptions, reflecting the government's dual goals of international integration and sovereign flexibility (Orujov, 2025). The findings suggest that successful accession will require calibrated sequencing of liberalisation in energy and agriculture to avoid disrupting domestic markets, targeted industrial and innovation policies to complement trade opening and foster diversification, institutional capacity building – particularly in SPS regulation and service sector governance – to meet WTO compliance requirements, and strategic use of transitional arrangements, flexible tariffs, and exemptions to safeguard politically and economically sensitive sectors.

Table 4. Comparative WTO accession strategies

Country	Accession year	Negotiation period	Key strategic concessions	Sovereignty safeguards
Georgia	2000	3 years	Full tariff liberalisation, rapid SPS/TBT alignment	Minimal transitional protections
Kazakhstan	2015	19 years	Phased liberalisation of agriculture and energy	Retained EAEU trade exemptions
Kyrgyzstan	2013	13 years	Market access in services, agriculture, and small-scale industry	Market access in services, agriculture, and small-scale industry
Azerbaijan (prospective)	-	-	Phased liberalisation, selective sector protection	Flexible tariff schedules, sectoral exemptions

Source: compiled by the author based on D. Cadier & L.-C. Brunet (2014), R. Dragneva & K. Wolczuk (2017), World Trade Organisation (n.d.a)

This policy ambivalence is mirrored in the country's negotiating approach, as revealed in Azerbaijan's MFTR and Working Party discussions (WTO. Working Party on the Accession of Azerbaijan: Summary of Discussions and MFTR, Geneva), where the state consistently advocates for special and differential treatment, including longer transition periods, flexible tariff schedules, and sectoral exemptions, aligning closely with the accession strategies employed by Kazakhstan and Kyrgyzstan, and diverging from the rapid liberalisation pathway taken by Georgia; this divergence is further substantiated in Table 4, where post-accession economic performance indicates that gradualists such as Kazakhstan and Kyrgyzstan achieved relatively balanced outcomes in GDP growth and export diversification compared to Georgia, which, despite early liberalisation, encountered institutional strain in enforcing WTO commitments due to limited bureaucratic capacity. Institutional readiness assessments, based on a four-dimensional governance framework encompassing regulatory quality, enforcement consistency, bureaucratic efficiency, and stakeholder engagement, indicate that while Azerbaijan scores relatively well in customs modernisation and IPR enforcement – reflecting successful technical assistance programmes and alignment with TRIPS – significant gaps remain in SPS measures and services sector liberalisation, where regulatory opacity, administrative overlap, and insufficient capacity pose major challenges to full WTO compliance, as visualised in Figure 1, which illustrates Azerbaijan's relative lag behind Georgia, Kazakhstan, and Kyrgyzstan in these critical dimensions, raising questions about institutional absorptive capacity in the event of immediate accession. E. Orujov (2025) emphasised that Azerbaijan's prolonged WTO accession reflects not only technical trade misalignments but also deep-rooted political hesitations tied to economic sovereignty and regional leverage. He further argued that successful accession will depend on Azerbaijan's ability to align its domestic legal frameworks with WTO standards while safeguarding strategic sectors from premature liberalisation.

The findings of this study underscore the complexity of Azerbaijan's WTO accession dilemma, shaped by the interplay of strategic trade objectives, institutional readiness, and sovereignty concerns in a rapidly shifting global economic environment. While Azerbaijan has pursued diversification for more than two decades, its export profile remains overwhelmingly dominated by hydrocarbons, with oil accounting for 83% of exports in 2023 and non-oil exports representing only 17%. This structural imbalance confirms the insights of R.M. Auty (2001), who argued that resource-rich economies often fall prey to the "resource curse", whereby reliance on extractive sectors generates institutional inertia and undermines incentives for diversification. In Azerbaijan's case, the persistence of tariff peaks in agriculture and weak performance in agro-processing (RCA < 0.6) illustrate how state dependency on oil revenues constrains the ability to reorient policy toward competitive non-oil sectors. A. Gelb (2010) similarly emphasised that resource dependence entrenches fiscal reliance on rents, crowding out incentives for reform. The evidence from Azerbaijan supports this argument, as the government continues to prioritise hydrocarbon exports while reforms in customs, SPS compliance, and services liberalisation remain incomplete. The results

of current research confirm A. Gelb's observation: technocrats acknowledge the risks of overdependence but face political pushback when attempting to open protected sectors that are central to redistributive policies. This tension between economic rationality and political feasibility reveals why reform sequencing is critical for WTO accession. The STIM developed in this study reinforces the opinion that WTO accession is not merely technical but fundamentally strategic. H.J. Chang's (2002) argument that late industrialisers require policy space to nurture infant industries finds clear resonance in Azerbaijan's agricultural sector, where compliance scores remain low (SPS: 4/10). Liberalising prematurely in such areas risks undermining fragile domestic industries, reducing employment in rural regions, and provoking political resistance. Along with that, simulation results suggest that carefully phased liberalisation could reduce import surges to below 8% while gradually raising the non-oil share of exports toward 15% – an outcome consistent with H.J. Chang's advocacy of selective protection during development.

Comparisons with peer countries further contextualise Azerbaijan's challenges. Georgia's early and rapid accession generated benefits in terms of customs transparency and services liberalisation, reflected in its high compliance scores (Customs: 8/10, Services: 7/10). However, consistent with the World Bank (2016) assessment, Georgia's experience also demonstrated the risks of exposing domestic industries too quickly, leading to job losses and uncompetitive local firms. Azerbaijan's cautious approach appears justified in light of this precedent, suggesting that accelerated liberalisation without institutional readiness could create more costs than benefits. Kazakhstan provides a contrasting model. Its extended negotiation timeline and strategic exemptions illustrate how gradual integration can preserve sovereignty while still aligning with WTO norms. Studies on transition economies highlight that the countries with complex sectoral structures benefit from phased approaches to avoid destabilising key industries. The SMART simulation results for Azerbaijan echo this logic: the transitional scenario with phased reforms over five to ten years offered the most balanced outcomes, preventing sharp shocks while enabling non-oil export growth.

Kyrgyzstan's experience offers another cautionary example. Although it formally acceded to the WTO in 2013, post-accession performance has been mixed. Analyses suggest that Kyrgyzstan's limited institutional coordination constrained the benefits of accession, as tariff alignment was not always matched by national policy coherence. Azerbaijan risks a similar outcome if it prioritises accession benchmarks without addressing internal governance gaps, such as fragmented SPS enforcement and restrictive service sector licensing. The results of current study reveal a sharp divergence between technocratic and political perspectives, echoing L. Baccini & J. Urpelainen's (2014) observation that international commitments are often shaped as much by political bargaining as by economic rationality. Technocrats in Azerbaijan highlighted accession's potential to signal credibility to investors and improve regulatory quality, while political elites stressed risks to food security, employment, and energy sovereignty. This divergence underscores the sovereignty-responsiveness trade-off embedded in the STIM framework: international credibility must be balanced against domestic legitimacy.

Ultimately, argument by D. Rodrik (2018) noted that integration should complement, not constrain, national development strategies resonate strongly with Azerbaijan's situation. The evidence from this study suggests that WTO accession should be pursued only as part of a broader reform package encompassing institutional strengthening, industrial upgrading, and governance reforms. Without such a foundation, accession risks becoming a symbolic milestone rather than a transformative catalyst. Conversely, if embedded in a holistic development strategy, accession could help Azerbaijan reduce overreliance on hydrocarbons, raise the non-oil share of exports from its current 17% to closer to 20% within a decade, and attract more diversified FDI inflows. Taken together, these findings suggest that Azerbaijan cannot replicate the trajectory of any single comparator but must instead craft a hybrid approach. From Georgia, it can learn the value of institutional transparency; from Kazakhstan, the benefits of phased liberalisation; from Kyrgyzstan, the importance of the national policy coherence. Combining these lessons with its own institutional realities offer the most sustainable path forward.

Taken together, the findings reveal that Azerbaijan's WTO accession prospects are shaped by a persistent tension between high integration potential and strong sovereignty concerns. Quantitative evidence from SMART simulations and RCA analysis underscores the opportunities for non-oil diversification, but also highlights structural vulnerabilities in agriculture and continued hydrocarbon dependence. Comparative analysis with Georgia, Kazakhstan, and Kyrgyzstan shows that gradual and sequenced liberalisation delivers more balanced outcomes than rapid reforms, particularly in contexts of limited institutional capacity. In conclusion, the synthesis of statistical indicators and policy documents demonstrates that accession cannot be treated as a purely technical exercise but requires careful political calibration to align national development goals with multilateral trade commitments.

CONCLUSIONS

This study has shown that Azerbaijan's path toward WTO accession is shaped by a delicate balance between economic integration and the preservation of the national policy flexibility. The results highlight that the country's trade structure continues to be dominated by hydrocarbons, which account for around 83% of total exports. Despite modest growth in non-oil sectors, revealed comparative advantage analysis confirmed that diversification remains limited, leaving agriculture and manufacturing relatively weak in global competition. This overdependence on energy revenues underscores the structural vulnerability of

Azerbaijan's economy and the political caution with which policymakers approach accession.

Quantitative findings from the SMART simulation provide further clarity on the economic implications of different accession scenarios. Under full liberalisation, non-oil imports were projected to increase by approximately 12.7%, but the agricultural sector risked a contraction of about 4.9% in the absence of compensatory measures. Selective exemptions, by contrast, allowed Azerbaijan to shield sensitive sectors such as agro-chemicals and petro-refined goods, while still achieving a 5.3% increase in export diversity. The phased liberalisation scenario, extending over a period of five to ten years, offered a balanced path by reducing adjustment shocks and enabling a gradual opening of the economy in line with domestic reform capacity.

Taken together, these findings suggest that WTO accession cannot be approached as a purely technical exercise. The evidence points to the need for a sequenced and adaptive strategy that combines gradual tariff reductions with sectoral carve-outs and transition periods. Targeted reforms in customs administration, SPS measures, and services liberalisation are particularly important for achieving compliance and building resilience. Overall, accession should be framed as a strategic process that leverages integration benefits while safeguarding key national interests.

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Ельшан Оруджов
Кандидат економічних наук
Бакинський університет бізнесу
AZ1122, вул. Г. Зардабі, 88A, м. Баку, Азербайджан
Азербайджанський Університет
AZ1007, вул. Джейхуна Гаджибейлі, 71, м. Баку, Азербайджан
https://orcid.org/0009-0005-0996-912X

Стратегічне торговельне вирівнювання та суверенна гнучкість: дилема Азербайджану щодо вступу до СОТ в умовах мінливого глобального порядку

Анотація. Потенційний вступ Азербайджану до Світової організації торгівлі (СОТ) має високу актуальність, оскільки відображає ширший виклик узгодження економічної модернізації зі збереженням суверенітету в умовах швидкої зміни глобального та регіонального контексту. Метою дослідження було проаналізувати шлях Азербайджану до вступу в СОТ як кейс того, як країни, що розвиваються, намагаються поєднати багатосторонні торговельні зобов'язання із захистом стратегічних секторів національної економіки. Дослідження ґрунтувалося на змішаному методологічному підході, що поєднував якісний аналіз торговельної та політико-економічної документації з порівняльним бенчмаркінгом пострадянських держав, які вже здійснили вступ. Результати показали, що членство в СОТ має потенціал для сприяння довгостроковій диверсифікації економіки Азербайджану, посилення довіри інвесторів та підвищення прозорості регуляторних рамок. Водночас зобов'язання в межах вступу, ймовірно, обмежать здатність уряду застосовувати захисні заходи у чутливих секторах, зокрема сільському господарстві, енергетиці та сфері послуг. Аналіз показав, що вибір Азербайджану щодо вступу не був виключно економічним; на нього впливали змінні регіональні альянси, коливання на ринках вуглеводнів і тиск глобальної торговельної лібералізації. Для відображення цих напружень у дослідженні було запропоновано концептуальну рамку «стратегічне торговельне вирівнювання та суверенна гнучкість», яка пояснює обережну позицію Азербайджану на переговорах. Отримані результати можуть бути використані торговельними переговорниками для формування стратегій вступу, що забезпечують інтеграцію в глобальну економіку, водночас зберігаючи адаптивні механізми управління

Ключові слова: торговельна політика; економічний суверенітет; пострадянська інтеграція; регіональні економічні зсуви; стратегічна дилема

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Halyna Plysenko*
PhD in Economics, Associate Professor
Igor Sikorsky Kyiv Polytechnic Institute
03056, 37 Beresteiskyi Ave., Kyiv, Ukraine
https://orcid.org/0000-0003-0561-0732

Inna Lavrenchuk
Bachelor
Igor Sikorsky Kyiv Polytechnic Institute
03056, 37 Beresteiskyi Ave., Kyiv, Ukraine
https://orcid.org/0009-0004-6374-9032

Marketing pricing policy in the cosmetic business of Ukraine: Analysis of the activities of L'Oreal Ukraine LLC

Abstract. The relevance of the study is determined by the need for effective pricing in conditions of growing competition and economic instability in the Ukrainian cosmetics market. The aim of the study was to evaluate the effectiveness of the marketing pricing policy of L'Oréal Ukraine LLC in the premium segment and to determine optimal pricing approaches, considering consumer behaviour. Using methods of comparative analysis, evaluation, determination of price elasticity of demand, product life cycle analysis, and pricing strategy analysis, the pricing approaches of L'Oréal Group (Ukraine) in 2020-2023 were investigated. A comparison of financial indicators, price dynamics, and characteristics of premium lipsticks from various brands was conducted. The products of the Lancôme brand, specifically L'Absolu Rouge Drama Ink and Lip Idôle Butterglow lipsticks, were thoroughly analysed, including an assessment of their cost, positioning, consumer value, and competitive environment. To determine an appropriate price level for Lip Idôle Butterglow, the value-based pricing method was applied, which allowed for substantiating the approximate optimal price as one that corresponds to the average market indicators of the premium segment and ensures profit maximisation. The influence of psychological perception, seasonality, sales format (online, retail, pharmacies) and consumer type (mass, professional, collectible) on pricing policy was determined. Optimal positioning was justified, taking into account the product life cycle stage. An algorithm for calculating the optimal price of a new product in the premium cosmetics market in Ukraine is proposed. A combined approach to assessing the effectiveness of pricing strategy is developed, combining financial indicators, consumer behaviour and elements of behavioural economics. The results of the study can be used to develop effective approaches to product positioning, increasing profitability and consumer loyalty in conditions of competition and economic instability

Keywords: strategy; pricing; market; demand elasticity; consumer behaviour

INTRODUCTION

In the context of increasing competition within the Ukrainian cosmetic goods market, the effectiveness of pricing decisions takes on particular importance. Price becomes not only a tool for cost recovery but also a means of building consumer trust, positioning a brand, and sustaining stable demand. The specific nature of the cosmetic segment lies in combining the functional and emotional characteristics of a product, which determines the dependence of purchasing decisions on the psychological perception of value. Under such conditions, successful pricing requires not only an

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*Corresponding author

analysis of market factors but also a deep understanding of consumer behaviour in various price niches. In recent years, the problem of forming an effective pricing policy for enterprises, particularly in the Business-to-Consumer (B2C) sector, has received widespread coverage in scientific literature. Specifically, the work of N.O. Yevtushenko & N.V. Vasyilkova (2025) examined the impact of macroeconomic instability on the pricing policy of Ukrainian enterprises. The authors drew attention to the need to adapt pricing strategies to high levels of risk and fluctuations in the purchasing power of the population, but they overlooked aspects of consumer price behaviour in premium segments of the cosmetics market. Based on the analysis conducted, they concluded that pricing flexibility is a crucial factor in ensuring business survival during prolonged crisis periods.

A.M. Kulyk & Z.F. Bryndzya (2020) investigated cost management issues in the service sector and the impact of pricing on financial performance. The work contained valuable generalisations regarding price calculation methods but focused primarily on intangible services, which limits its practical relevance to tangible goods such as cosmetics. At the same time, the authors emphasised that effective pricing policy contributes to increased profitability even under conditions of limited demand. In the work of O. Laburtseva (2021), marketing aspects of pricing policy formation in retail chains were examined. The author described in detail the factors influencing price changes in the mass segment, including assortment structure, promotions, and advertising. As noted, a systematic approach to pricing allows not only for increased product turnover but also for maintaining a position in a competitive market. However, premium brands and factors of perceived value were not the subject of in-depth analysis.

A study by R.Y. Chenavaz *et al.* (2020) complemented the above-mentioned approaches by highlighting the link between product quality, advertising activity, and pricing dynamics. The authors proved that high product quality can serve as a basis for consistently higher prices, which is relevant for the premium cosmetics segment. N. Rani *et al.* (2025), within a sustainable approach to inventory management, considered the integration of advertising and pricing strategies as a factor in cost optimisation under environmental and tax regulations. This approach is useful from the perspective of forming a long-term pricing policy, taking into account external constraints and sustainable development requirements. In turn, H. Ma *et al.* (2024) investigated the impact of reference prices and unconditional coupons on consumer behaviour in online-to-offline (O2O) services. The authors showed that previous buyer experience and expectations of discounts significantly influence price decisions, confirming the relevance of considering behavioural mechanisms when forming pricing policies in conditions of digital transformation.

Overall, the analysis of scientific sources indicates the multifaceted nature of approaches to pricing policy formation depending on the specific industry, product, or service. However, most works do not pay sufficient attention to the peculiarities of pricing in the premium segment of the cosmetic market, where not only costs but also the perception of brand value, the emotional component of consumption, and a high level of individualisation play an important role. Furthermore, questions regarding the adaptation of pricing strategies to behavioural changes in consumers under conditions of digitalisation, personalised marketing, and demand instability remain insufficiently developed. In the context of a lack of research that integrates economic calculations with marketing analysis of consumer behaviour and price elasticity in the premium cosmetics segment, the aim of this work is to investigate the effectiveness of pricing decisions of L'Oréal Ukraine LLC and to identify the most appropriate approaches to pricing, taking into account the peculiarities of distribution channels and consumer typology.

MATERIALS AND METHODS

To study the pricing policy and marketing strategies of L'Oréal Ukraine LLC, as well as to analyse the peculiarities of the Lancôme brand's performance in the Ukrainian premium cosmetics market, a set of methods for collecting and analysing information from official, analytical and practical sources was used. First of all, the study was based on the financial indicators of L'Oréal Ukraine LLC for 2020-2023. Data on net income, gross profit, expenses and profitability were obtained from official statistics published on the company's page on the American Chamber of Commerce in Ukraine (n.d.) website, as well as on the L'Oréal Groupe corporate website (n.d.a). Official data for 2024 remained confidential or had not yet been published at the time of writing; however, current market and forecast data for 2025 were additionally used to substantiate calculations, demand models and comparative tables in the study.

This information made it possible to assess the overall financial condition of the company and track the dynamics of its economic performance during a period of increasing competition and changes in consumer behaviour. In addition, analytical materials from L'Oréal Groupe on the global marketing strategy of "universalisation" (L'Oréal Groupe, n.d.b) were used to determine the conceptual basis for promoting the Lancôme brand. The marketing messages and positioning of Lancôme brand products, in particular L'Absolu Rouge Drama Ink lipstick, were researched based on the official Lancôme UK website (Lancôme, n.d.), the French website (Lancôme Paris, n.d.), the American version (Lancôme USA, n.d.) and the Ukrainian representative office (Lancôme Ukraine, n.d.). These sources made it possible to compare official prices in different countries.

In addition, the Lip Idôle Butterglow product was analysed separately to assess consumer value, cost price and calculate the optimal price based on market data. Actual retail prices, discounts and features of cosmetics sales were analysed using the EVA (EVA.UA, n.d.), BROCARD (BROCARD, n.d.), MAKEUP and NOTINO platforms. In particular, prices for identical units of goods were compared, as well as loyalty conditions, bonus programmes and the frequency of promotions. This made it possible to

identify the characteristics of pricing policy in Ukrainian retail chains. Loyalty programme conditions in chains such as EVA Mozaika (EVA.UA, n.d.) and Watsons Club (Watsons, n.d.) were also considered, which provided an understanding of additional marketing incentives for buyers in the form of loyalty programmes.

RESULTS AND DISCUSSION

L'Oréal Ukraine LLC, part of the international L'Oréal Group, has been operating in the Ukrainian market since 2004, with the first product deliveries made in 2005 (American Chamber of Commerce in Ukraine, n.d.). The company's structure comprises four main divisions: the Consumer Products division, the Luxe Products division, the Professional Products division, and the Active Cosmetics division (L'Oréal Groupe, n.d.a). One of the key marketing strategies that L'Oréal implements globally is "universalisation" – an approach that combines a standardised product policy with adaptation to local cultural, social, and market conditions (L'Oréal Groupe, n.d.b). This strategy involves manufacturing products according to international quality standards while simultaneously considering the specific characteristics of demand in individual countries.

Within the Ukrainian market, this strategy was implemented through the localisation of communication practices, consideration of the social context, and adaptation of the assortment policy. Specifically, marketing campaigns for brands within the company's portfolio are conducted in Ukrainian and take into account local cultural peculiarities and public sentiment. In the post-war period, the company has also modified its content, emphasising local initiatives and social support themes. Furthermore, the product assortment is adapted to the demands of Ukrainian consumers by selectively introducing product lines that meet local demand, without directly duplicating the global offering.

In the realm of pricing, the universalisation strategy is realised through the use of flexible pricing approaches, oriented towards consumer purchasing power. At the same time, the positioning of individual brands in the premium segment is maintained, which is reflected, for instance, in the limited application of price discounts. Individual product items and sets are also formulated with local economic conditions in mind. These approaches create an operating model that sustains a unified global brand identity while adapting to the conditions of a specific national market. This contributes to enhancing the relevance of marketing actions, as well as the consistency of communication and pricing policies at the local level.

In 2023, L'Oréal Ukraine LLC demonstrated a significant improvement in financial indicators compared to previous years. The financial results of L'Oréal Ukraine LLC from 2020-2023 show dynamic changes in key indicators (L'Oréal Groupe, n.d.a). The company's net income in 2020 was 3.232 billion UAH, rising to 3.839 billion UAH in 2021, decreasing to 2.616 billion UAH in 2022 due to external circumstances (specifically, the war), but already reached 4.975 billion UAH in 2023. A similar trend is demonstrated by gross profit: from 1.835 billion UAH in 2020 to a peak value of 2.903 billion UAH in 2023, after a fall to 1.514 billion UAH in 2022.

The cost of goods sold fluctuated between 1.1 and 2.1 billion UAH, with operating profit at 0.522 billion UAH in 2020, rising to 0.594 billion UAH in 2021, significantly decreasing to 0.087 billion UAH in 2022, and reaching 1.140 billion UAH in 2023. Net profit changed similarly: 0.422 billion UAH (2020), 0.480 billion UAH (2021), 0.069 billion UAH (2022), and 0.920 billion UAH (2023). The growth in the company's assets – from 1.327 billion UAH in 2020 to 4.248 billion UAH in 2023 – indicates an expansion of operations. Equity also grew until 2022, reaching 0.605 billion UAH, but figures for 2023 have not been released. It is worth noting the decrease in return on assets and equity in the crisis year of 2022 (to 3.50% and 14.30% respectively), as well as a reduction in net margin to 3.31%. Data for 2023 regarding these indicators are currently unavailable.

Overall, despite a temporary deterioration in financial results in 2022, the company demonstrated an ability to recover and strengthen its market position, indicating the effectiveness of management decisions and marketing strategy in unstable conditions. To analyse the specificities of pricing in the premium segment, Lancôme's L'Absolu Rouge Drama Ink lipstick was chosen. The product is positioned as an innovative decorative cosmetic item in the growth stage of its life cycle, as confirmed by active marketing campaigns. This allows for investigating pricing mechanisms, taking into account market trends, demand elasticity, and the influence of the brand component on consumer behaviour.

Demand for cosmetic products has several characteristics that shape consumer behaviour in the market and determine a brand's pricing policy. Firstly, it should be noted that demand for cosmetic products is primary, not secondary. This means that cosmetic products are end goods for the consumer, not components or additions to other products. The buyer purchases cosmetics directly for personal use, which differentiates them from goods used for production purposes. Secondly, price elasticity of demand plays an important role (Shtal *et al*., 2023). The example of Lancôme lipsticks shows that when the price increased from 1,500 UAH in 2022 to 1,650 UAH in 2023, sales volume decreased from 50 thousand to 48 thousand units (Lancôme Ukraine, n.d.). Calculation of elasticity shows a coefficient of 0.4, indicating inelastic demand. This is typical for luxury products, where consumers are less sensitive to price changes, as the purchase decision is based not only on cost but also on brand image, quality, and the product's status.

Demand for L'Oréal Groupe products is cross-elastic due to the presence of numerous substitutes and complementary goods (L'Oréal Groupe, n.d.b). Demand is typically paired, as many cosmetic products are consumed in combination (e.g., shampoo and conditioner). Consumer choice tends towards rationalisation: quality, price, effectiveness, and brand reputation are all considered. Seasonal variability in demand, driven by weather, social, and marketing factors, is also observed. Precise information on

the cost of producing a single unit of Lancôme L'Absolu Rouge Drama Ink lipstick (3 ml volume) is confidential and not officially disclosed. However, by analysing the general principles of cost formation in the premium decorative cosmetics segment (McKinsey & Company, 2021), a typical cost structure can be determined. Its main components usually include costs for high-quality ingredients (in particular, water-oil emulsions, durable pigments, wax, silicones, and plant extracts), individualised packaging with premium design, quality control, logistics (delivery, storage, distribution), as well as marketing and promotion expenses. According to McKinsey & Company (2021), the share of direct production costs in the price structure of a premium cosmetic product typically amounts to about 25-35%, with the remainder attributed to brand management, marketing, and distribution, depending on the sales region and distribution channel. Exact numerical data remain internal financial information for companies and may vary depending on production volumes and supply conditions. L'Oréal Ukraine LLC is represented in the decorative cosmetics market across all major price segments – from mass-market to premium. In the higher price segment (luxury), the company sells products under the Lancôme and Yves Saint Laurent (YSL) brands, which demonstrate consistently high price levels – around 1,500-1,800 UAH per product unit (Table 1).

Table 1. Reactions to price changes by the market leader for 2025

No.	Competitive behaviour strategy	Brand name (example)	Pricing strategy	Reaction to price change by the leader (Chanel, Dior, Lancôme/YSL)
1	Market leader	L'Oréal (YSL)	~1,600-1,700 UAH	Prices remain stable; absence of short-term corrections
2	Leader imitation	Estee Lauder	~1,500-1,600 UAH	Gradual price adjustment after leader change
3	Leader challenge	Charlotte Tilbury	~800-1,300 UAH	Entry with lower prices for similar consumer characteristics
4	Expert strategy	Lancôme (limited collections)	~2,200-2,300 UAH	Release of limited series with higher pricing
5	Stagnation strategy	Gucci Beauty	~1,400-1,500 UAH	Maintaining stable prices regardless of leader's actions

Source: systematised by the authors based on data from L'Oréal Groupe (n.d.b)

For instance, the cost of Lancôme L'Absolu Rouge Intimatte lipstick is approximately 1,799 UAH, and YSL Rouge Pur Couture is around 1,592 UAH (Online Make-up Academy, n.d.). Factors contributing to this pricing include the use of advanced formulations, more intricate packaging designs, and high costs associated with brand development and recognition maintenance. In the mass premium segment, the company is represented by the L'Oréal Paris and NYX brands. Products from these brands typically cost 400-600 UAH. Specifically, the average price of L'Oréal Color Riche lipstick is around 460 UAH, and NYX Lingerie XXL is about 399 UAH (Brocard, n.d.). This segment is characterised by a combination of certified mid-range ingredients, simplified packaging, and large-scale production, which ensures a more affordable price while retaining the product's basic qualities.

In the lower price segment (mass-market), the Maybelline brand operates, also belonging to the L'Oréal group. The approximate price per unit is 200-300 UAH (for example, Color Sensational is around 240 UAH, SuperStay Matte Ink is about 375 UAH, EVA.UA, n.d.). Price reduction is often achieved through simplified formulations, more standardised production technologies, and high production volumes.

An analysis of competitive strategies indicates that Lancôme and YSL, as part of L'Oréal's portfolio, adopt a price leader strategy, maintaining consistently high prices and minimising short-term reactions to competitors' actions. Meanwhile, Estée Lauder, which is not part of the L'Oréal group, employs a leader-follower strategy, gradually increasing prices in line with Lancôme/YSL. The Charlotte Tilbury brand demonstrates a challenger strategy, offering products with similar characteristics at a lower price. Gucci Beauty, not belonging to L'Oréal, operates according to a stagnation strategy, maintaining a constant price. From a competitive strategy standpoint, a combination of two pricing approaches is appropriate for L'Oréal Ukraine LLC in the Ukrainian market: on the one hand, maintaining the premium positioning of brands such as Lancôme and YSL, realised through high prices, limited product series, and personalised offers; on the other hand, applying an adaptive pricing policy in the mid-range and mass segments, specifically through temporary discounts, special product bundles, and differentiation by sales channels (Lancôme USA, n.d.). Such price flexibility in the mass consumption segment allows for maintaining competitiveness under conditions of consumer price sensitivity, while the strategy of limited availability and stable premium levels in the luxury segment helps preserve high consumer perception of the brands and positions the company in the upper price range.

Thus, L'Oréal Ukraine uses price differentiation within its brand portfolio: from mass-market (Maybelline) to mass premium (L'Oréal Paris, NYX) and luxury (Lancôme, YSL). This allows for adapting the offering to different consumer segments and ensures pricing policy flexibility depending on the economic situation. For the company's further development, it is advisable to maintain this multi-level model with the possibility of implementing mixed strategies – for example, expanding limited releases in the high-end segment and personalised promotions in the mass segment (Table 2).

Table 2. Example of price differentiation within L'Oréal brands for 2025

No.	Brand	Low price	Medium price	High price
1	Maybelline	Hydra Extreme (~200 UAH)	Color Sensational (~260-300 UAH)	SuperStay Matte Ink / Vinyl (~370-400 UAH)
2	L'Oréal Paris	Color Riche basic (~400-500 UAH)	Rouge Signature rare (~600 UAH)	Limited collections Color Riche (~630-650 UAH)
3	Lancôme	–	L'Absolu Rouge Drama Ink (~1,639 UAH)	Limited editions (e.g., Lancôme x Louvre) – up to 1,799-2,300 UAH

Source: compiled by the authors based on data from BROCARD, (n.d.), EVA.UA, (n.d.), Watsons, (n.d.)

In the mass market, it's possible to use loss leaders as an attraction tool (Watsons, 2025). For example, a basic L'Oréal Paris lipstick might be temporarily sold at a discount (below cost price) to draw customers to the brand. Subsequently, it's expected that they will purchase more expensive variations of the same brand. This is precisely how the assortment transition logic is created – the consumer tries an affordable product, is convinced of its quality, and is then willing to invest in a premium line. L'Oréal sets different prices for different consumer groups: for wholesale clients (EVA, Watsons, Brocard chains) – a discount for large volume purchases, for instance, Lancôme lipstick may be 30% cheaper than the retail price; for professionals (make-up artists, beauty salons) – special conditions under the "Pro Card" programme, allowing products to be purchased at a discount (OnlineMakeupAcademy, n.d.); for loyal customers – 10-20% discounts with Brocard (BROCARD, n.d.), EVA (EVA.UA., n.d.), and Watsons (Watsons, n.d.) loyalty cards; for mass consumers – gift sets at a price lower than if purchasing individual items (e.g., a set for 2,500 UAH instead of over 3,000 UAH); for collectors – limited editions with exclusive designs at an elevated price (e.g., Lancôme x Louvre – 2,300 UAH, instead of the standard 1,600-1,700 UAH, (Watsons, n.d.).

L'Oréal, and specifically its Lancôme brand, applies geographical price discrimination to products such as L'Absolu Rouge Drama Ink lipstick. This means that prices for the same product vary depending on the country of sale. For example, the cost of this lipstick in France is 1,327 UAH (Lancôme Paris, n.d.), in the USA – 1,452 UAH (Lancôme USA, n.d.), and in Ukraine – 1,639 UAH (Lancôme Ukraine, n.d.). L'Oréal sets regional prices taking into account delivery costs, local taxes, purchasing power, and other factors. A single global price is not applied (L'Oréal Groupe, n.d.a). In international practice, transfer pricing occurs according to Incoterms, and in Ukraine, these conditions are stipulated in the contract. L'Oréal implements a combined approach to pricing, blending fixed prices with elements of flexibility. For mass-market brands, such as L'Oréal Paris and Maybelline, temporary promotions and discounts are regularly applied, allowing for quick demand stimulation during specific periods, for example, during major sales (L'Oréal Groupe, n.d.a).

At the same time, premium brands like Lancôme and YSL generally adhere to a stable pricing policy, although a few times a year, the company runs promotions with discounts of up to 20-30%, timed for holiday periods. During peak demand season, limited editions are released at a higher price, which may subsequently be marked down if unsold. Prices are also adjusted throughout the product's life cycle: new lipsticks usually launch at a higher price and are later reduced or replaced by updated lines. An analysis of L'Oréal's pricing strategy demonstrates a differentiated approach to brand portfolio management. In the mass segment, the company employs a tactic of price stimulation through regular promotional activities, confirmed by increased sales volumes during promotional periods. Concurrently, for luxury category brands (Lancôme, n.d.), a strategy of limited availability and selective price reduction is implemented, which theoretically should maintain a sense of exclusivity among the target audience. The company demonstrates adaptability in its pricing policy according to product life cycle stages and seasonal demand factors. Inventory management is carried out through markdown mechanisms for remaining stock, which helps minimise losses from unsold products, although the impact on brand reputation requires separate investigation.

For the premium Lancôme segment, a combination of value-based pricing and demand-based pricing seems appropriate. The first method involves assessing consumer value through a combination of the product's functional and symbolic attributes, while the second determines the optimal price level considering the low price elasticity of demand characteristic of this segment (a coefficient of 0.4 according to calculations). Based on calculations using the consumer value comparison method, the optimal estimated price for Lancôme Lip Idôle Butterglow lipstick, adhering to the recommended premium positioning, is 1,439 UAH (based on the base price of Drama Ink at 1,639 UAH). If actual market prices are used, the recommended levels may vary: around 2,227 UAH (Makeup), 1,890 UAH (Brocard), 1,853 UAH (Notino), and 1,682 UAH (Eva). These values can serve as the basis for a flexible pricing strategy, taking into account the sales platform and target audience. Based on the calculations of recommended prices using the value comparison method, a range of possible prices for Lancôme Lip Idôle Butterglow lipstick was formed. It covers price levels set on the MAKEUP (2,227 UAH), EVA (1,682 UAH), NOTINO (1,853 UAH), BROCARD (1,890 UAH) platforms, as well as the recommended retail price of the Lancôme brand (1,439 UAH). Expected demand at each price is determined based on statistical data on the popularity of the Lancôme brand, the characteristics of Lip Idôle Butterglow, and market trends in the premium segment

(Lancôme, n.d.). Thus, it is possible to determine which retail price allows for achieving maximum profit, considering the expected demand established at the previous stage, and the cost of one unit of production – 480 UAH (Table 3).

Table 3. Calculation of income and profit based on expected demand for 2025

Price level	Price (UAH)	Expected demand (units)	Profit per unit (UAH)	Total profit (UAH)
Lancôme	1,439.00	230	719.00	165,370.00
EVA	1,681.46	210	961.46	201,907.00
NOTINO	1,852.68	180	1,132.68	203,882.40
BROCARD	1,889.56	160	1,169.56	187,129.60
MAKEUP	2,227.61	130	1,507.61	196,989.30

Source: compiled by the authors based on data from Lancôme (n.d.), BROCARD (n.d.), EVA.UA (n.d.), Watsons (n.d.)

When the price is set at 1,852.68 UAH (NOTINO level), the highest overall profit of 203,882.40 UAH is expected. This indicates an optimal balance between price and maintaining a sufficient level of demand. Although other price levels ensure higher revenue or a greater number of buyers, it is at the price of 1,852.68 UAH that L'Oréal will achieve the highest financial result from the sale of Lip Idôle Butterglow in the Ukrainian market. The results obtained indicate that an effective pricing policy in the premium segment of the cosmetics market is formed through a combination of economic, behavioural, and strategic factors. Such conclusions generally align with the scientific approaches presented in the literature but have certain specific features due to the digital context, segmental specialisation, and the specifics of the Ukrainian market. In particular, V.V. Obozna (2017) stated that price determination is a component of a company's overall business strategy, aimed at profitability, quality, and competitiveness. In this study, this tenet received empirical confirmation, as the pricing strategy of the Lancôme and YSL brands was linked not only to the product's cost characteristics but also to maintaining premium positioning in conditions of price sensitivity in other segments.

M.O. Pashkuda (2024) considered effective pricing as a tool for a company's financial stability in strategically important industries. In this work, the mentioned approach was concretised through the calculation of an optimal price using the example of Lancôme Lip Idôle Butterglow lipstick, which ensures a balance between consumer expectation, cost price, and target mark-up. The author focused on the macroeconomic level, while this study deepened the topic by analysing psychological influence, distribution channels, and demand elasticity. I.B. Babukh (2024) emphasised that companies often lack a sufficient methodological basis for adapting prices to a changing market. In response, this work proposed a combined approach that blends classic financial indicator analysis with an assessment of behavioural and marketing factors, including digital positioning, the use of promotions, limited editions, and campaigns based on consumer segmentation.

M.M. Kochevoi *et al.* (2024) underscored the role of price as the main communicator of value proposition. The study, using L'Oréal's premium products as an example, showed how price stability maintains brand trust, especially in the "luxury" segment, whereas in the mid-range segment, adaptive scenarios using limited discounts and gift sets proved more effective. A common thread is the recognition of the importance of price transparency as a factor influencing purchasing behaviour. O.I. Andrus (2024) proposed viewing price not only as an indicator of market value but also as a stimulant for innovation and a mechanism for orienting business towards sustainable development. In contrast, this study demonstrates that a high price in the premium segment not only compensates for production and promotion costs but also funds innovative developments, formula improvements, and personalisation of offers, which are key elements in modern brand positioning.

N. Zhang *et al.* (2023), analysing pricing strategies for innovative products in supply chains, introduce the concept of anticipated regret, which influences consumer behaviour in pricing decisions. This tenet is also confirmed in this study: limited editions of Lancôme lipsticks stimulate consumer decisions precisely through the fear of missing out, highlighting the need for deeper consideration of behavioural triggers. A. Antoniades *et al.* (2023) investigated companies' reactions to external shocks (economic, social), which translate into changes in promotional policies, price reductions, or modifications of market entry points. Similar observations were made in this analysis of L'Oréal Ukraine LLC's actions during 2022-2023: the company activated short-term incentives during periods of reduced purchasing power, while simultaneously maintaining its premium pricing policy unchanged.

I.M. Oklander (2023) highlighted the role of the digital environment in transforming pricing models. In contrast, this study confirmed this trend: a significant difference in prices depending on the sales channel (online platforms, retail chains, pharmacies) was found, indicating the active use of dynamic and personalised pricing approaches in the digital economy. The impact of promotions and discounts on consumer behaviour in retail was thoroughly examined in T. Watt *et al.* (2023), which indicates that promotions can change not only sales volumes but also demand structure. These conclusions fully correlate with the analysis of the use of promotional sets in the mid-range cosmetics segment in this article, demonstrating the high price sensitivity of Ukrainian consumers during periods of economic uncertainty.

P. Kumar *et al*. (2022) examined the modelling of product diffusion in the market, taking into account price sensitivity in different segments. This work shares a similar approach, as it is built on an analysis of differences in price perception depending on the consumer type (mass, professional, loyal) and the product life cycle stage, allowing for precise segmentation of the promotional policy. Special attention is deserved by the study of X. Meng & E.C. Jaenicke (2021), which dealt with the competition of private brands in the consumer goods market. The authors proved that aggressive price competition in the mid-range segment stimulates the development of private labels. In this study, this issue was not directly addressed, but it was concluded that maintaining price leadership in the premium segment requires clear positioning and avoiding participation in price wars. Thus, the results of this study confirm and supplement the main scientific approaches to pricing in the B2C segment, particularly in the cosmetics business. Common features include the recognition of the multifunctional nature of price, the importance of elasticity, adaptability, and the significance of consumer perception. At the same time, a distinguishing feature of this study is its emphasis on empirical calculations of optimal price using behavioural models, personalisation, channel differentiation, and analysis of a specific brand in the Ukrainian market.

CONCLUSIONS

The analysis of pricing policy in the Ukrainian cosmetic market has shown that effective pricing is a fundamental tool for ensuring a company's stable development, maintaining competitive positions, and building consumer loyalty. The study of L'Oréal Ukraine LLC's operations confirmed that the successful implementation of a pricing strategy is based on a combination of premium brand positioning, adaptation to economic conditions, and a deep understanding of consumer behaviour in the market. The company employs a differentiated approach to pricing, effectively covering the mass, mid-range, and premium market segments through its brand portfolio including Maybelline, L'Oréal Paris, NYX, Lancôme, and YSL. A detailed analysis of Lancôme Lip Idôle Butterglow's pricing, based on demand modelling and considering a cost price of 480 UAH, determined the optimal retail price to be 1,852.68 UAH. At this price, the maximum total profit of 203,882.40 UAH is expected, which confirms the product's successful positioning in the "affordable luxury" segment and the effectiveness of consumer value assessment methods.

The investigation into pricing mechanisms within the premium segment was conducted using two Lancôme brand products as examples: Lip Idôle Butterglow and L'Absolu Rouge Drama Ink. The analysis of the latter's pricing strategy revealed the specifics of positioning this product as a "premium standard setter", ensuring the stability of brand value perception regardless of seasonality or promotions. An analysis of the price range from 1,439 UAH to 2,227 UAH across various platforms (EVA, NOTINO, Brocard, MAKEUP) demonstrates that L'Oréal uses a strategy of price adaptation for different sales channels while maintaining its premium image. The combination of psychological pricing, seasonal discounts, gift sets, and geographical price differentiation forms a flexible pricing policy model aimed at maximising profit and strengthening the brand's position. A promising direction for further research is to expand the comparative analysis to include other cosmetic companies, taking into account the influence of external economic factors, particularly war, inflation, and behavioural shifts, as well as evaluating the effectiveness of personalised pricing in e-commerce, especially in the context of digital transformation.

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Галина Плисенко

Кандидат економічних наук, доцент
Київський політехнічний інститут імені Ігоря Сікорського
03056. просп. Берестейський, 37, м. Київ, Україна
https://orcid.org/0000-0003-0561-0732

Інна Лавренчук

Бакалавр
Київський політехнічний інститут імені Ігоря Сікорського
03056, просп. Берестейський, 37, м. Київ, Україна
https://orcid.org/0009-0004-6374-9032

Маркетингова цінова політика у косметичному бізнесі України: аналіз діяльності ТОВ «Лореаль Україна»

Анотація. Актуальність дослідження зумовлена необхідністю ефективного ціноутворення в умовах зростання конкуренції та економічної нестабільності на ринку косметичних товарів України. Метою дослідження була оцінка ефективності маркетингової цінової політики ТОВ «Лореаль Україна» у преміальному сегменті та визначення оптимальних підходів до ціноутворення з урахуванням поведінки споживачів. За допомогою методів порівняльного аналізу, оцінювання, визначення цінової еластичності попиту, аналізу життєвого циклу продукту та аналізу цінових стратегій було досліджено підходи до ціноутворення в L'Oréal Group (Україна) у 2020-2023 роках. Проведено зіставлення фінансових показників, динаміки цін та характеристик преміальних помад різних брендів. Детально проаналізовано продукцію бренду Lancôme, зокрема помади L'Absolu Rouge Drama Ink і Lip Idôle Butterglow, включно з оцінкою собівартості, позиціонування, споживчої цінності та конкурентного середовища. Для визначення доцільного рівня ціни Lip Idôle Butterglow застосовано метод порівняння споживчої цінності (value-based pricing), що дозволило обґрунтувати орієнтовну оптимальну ціну як таку, що відповідає середньоринковим показникам преміального сегменту та забезпечує максимізацію прибутку. Визначено вплив психологічного сприйняття, сезонності, формату реалізації (онлайн, роздріб, аптеки) та типу споживача (масовий, професійний, колекційний) на цінову політику. Обґрунтовано оптимальне позиціонування з урахуванням етапу життєвого циклу продукту. Запропоновано алгоритм розрахунку оптимальної ціни нового продукту на ринку преміальної косметики в Україні. Розроблено комбінований підхід до оцінки ефективності цінової стратегії, що поєднує фінансові показники, споживчу поведінку та елементи поведінкової економіки. Результати дослідження можуть бути використані для розробки ефективних підходів до позиціонування продукції, підвищення прибутковості та споживчої лояльності в умовах конкуренції та економічної нестабільності

Ключові слова: стратегія; ціноутворення; ринок; еластичність попиту; споживча поведінка

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Oleh Hlushko*
Postgraduate
State University of Trade and Economics
02156, 19 Kioto Str., Kyiv, Ukraine
https://orcid.org/0009-0005-5170-8011

Evaluation of the effectiveness of diversification process management in an enterprise

Abstract. The study aimed to develop and test an integrated approach to assessing the effectiveness of diversification process management. The study used systemic-structural, comparative-analytical and integrated-assessment approaches, which ensured a comprehensive study of the interrelationships between the economic, strategic and managerial aspects of diversification, as well as the construction of an integrated performance index with stages of normalisation, weighting and aggregation of indicators, tested on the cases of 3M Company and General Electric. The study established that the effectiveness of managing diversification processes of an enterprise is determined by economic results, the quality of management procedures and the strategic alignment of business areas. The study determined that the integration of all three approaches provides a comprehensive assessment of the effectiveness of diversification. A methodological approach to the integrated assessment of the effectiveness of enterprise diversification management was developed. A system of three groups of criteria was proposed, which provides a comprehensive reflection of the results of diversification strategies. Based on data normalisation and weighted aggregation of indicators, an integrated management performance index was constructed and tested on the example of 3M Company and General Electric for 2024. The calculations showed that 3M Company demonstrated a higher integrated index of diversification management performance (0.857) compared to General Electric (0.671). Despite a lower Economic Value Added (6.1) compared to General Electric (7.5), the structure of the 3M Company portfolio remains more diversified (lower Herfindahl-Hirschman Index – 0.25 vs. 0.30), indicating greater flexibility and less concentration of business areas. The results obtained can be used to diagnose the effectiveness of diversification strategies in corporate governance, as well as to develop tools for strategic monitoring and optimisation of corporate business portfolios

Keywords: financial performance; strategic alignment; quality of management decisions; integrated index; business portfolio

INTRODUCTION

Diversification of a company's activities is one of the tools for ensuring its stability and competitiveness. Effective management of the diversification process minimises risks associated with fluctuations in demand, technological changes or political factors, and creates the conditions for expanding market opportunities and increasing the value of the business. At the same time, business practice shows that having a diversified structure does not guarantee economic performance, as the quality of management of this process, its strategic consistency and adaptability to external changes are of decisive importance.

A review of modern scientific sources shows that the issue of assessing the effectiveness of managing the diversification of enterprises is the focus of interdisciplinary research covering economic, strategic and organisational aspects of business development. M.R. Bellon *et al.* (2020) highlighted the socio-economic consequences of diversification for small agricultural producers in developing

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*Corresponding author

countries. The researchers have proven that diversification is a tool for reducing vulnerability to external risks and, at the same time, a mechanism for increasing productivity by expanding the portfolio of activities. The study established that the effectiveness of diversification depends on the balance between specialisation and diversity, and the key factor is the ability of an enterprise to optimise the allocation of resources. The study by K. Buzhymska *et al.* (2024) revealed the impact of diversification strategies on strategic enterprise management. The study concluded that diversification has a dual nature: on the one hand, it is a means of minimising risks, and on the other, it can complicate the management system by increasing the number of areas of activity. The study established that successful diversification is only possible if there is a high degree of consistency between financial indicators and strategic priorities. N. Coviello *et al.* (2024) proposed a conceptual distinction between the concepts of "scaling", "scalability", and "expansion of activities", which is directly related to diversification processes. The study demonstrated that a company's ability to effectively scale its business directly depends on its level of organisational flexibility and the availability of institutional mechanisms for managing growth. In the context of assessing the effectiveness of diversification, this means that it is not only the number of areas of activity but also the quality of management structures that determines the success of development.

O. Hlushko (2024) examined changes in the strategic orientations of enterprises during martial law, particularly in the area of innovation management. The study determined that diversification in a crisis environment acts as a mechanism for survival and, at the same time, a driver of adaptive growth. The results show that enterprises that have implemented innovation-oriented diversification have demonstrated a higher level of resilience to shocks and have regained their competitiveness more quickly. M. Ilchuk *et al.* (2023) examined the processes of diversification of entrepreneurial activity in the agricultural sector of Ukraine in the post-war period. The study determined that expansion of areas of activity is a key factor in restoring the economic activity of agricultural enterprises. The significance of the institutional environment, access to finance and state support as moderators of diversification effectiveness is also emphasised. M. Martiyanova *et al.* (2023) developed a classification of diversification strategies and described the principles of their implementation and stages of development. The study proved that consistent passage through the stages from searching for new markets to forming a synergistic portfolio of activities is a guarantee of long-term effectiveness. The conclusions emphasise the significance of consistency in planning diversification processes and the significance of monitoring the effectiveness of management decisions at each stage of their implementation. G. Saliba *et al.* (2025) analysed the impact of strategic diversification on the financial performance of small and medium-sized enterprises in Lebanon. The study empirically proved that the optimal level of diversification correlates positively with profitability, while excessive diversification leads to a decrease in profitability due to a loss of focus in management processes.

The study by A. Tanasiichuk *et al.* (2020) substantiated methodological approaches to assessing the convergence of international agricultural markets in the context of enterprise diversification. The authors found that successful international diversification contributes to the equalisation of efficiency levels between countries through technology transfer and standardisation of management practices. M.V. Vovk & R.I. Stybel (2024) demonstrated that the diversification of agricultural enterprises is the basis for industry development, as it contributes to increased resilience to market fluctuations and creates potential for innovative growth. The researchers emphasised that the effectiveness of diversification increases when economic feasibility is combined with environmental and social guidelines.

In summary, it is possible to note that previous scientific research has mainly focused on individual aspects of diversification – economic, strategic or social – while a comprehensive assessment of the effectiveness of managing this process remains underdeveloped. The study aimed to develop a methodological approach to assessing the level of effectiveness of the diversification process management at an enterprise. The tasks of the article were to investigate current scientific positions on the criteria for assessing the effectiveness of diversification process management; to substantiate the structure of the methodology for assessing the effectiveness of diversification process management; to test the proposed approach on a sample of real sector enterprises, and to evaluate the practical applicability of the results obtained.

MATERIALS AND METHODS

The methodological basis of the study was formed by systemic-structural and comparative-analytical approaches, which determined the relationship between economic, strategic, and organisational-managerial aspects of diversification. The theoretical basis for building the model was the concepts of systemic measurement of corporate governance effectiveness, portfolio diversification theory, and strategic synergy approaches. In particular, an approach to the coordination of internal resources and external opportunities of an enterprise was used, which follows from the strategic alignment model developed based on the study by R.W. Puyt *et al.* (2024), proving that the effectiveness of diversification increases when strategic guidelines correspond to resource potential. The idea of integrating financial and non-financial performance parameters, presented in the work of L. Nguyen-Thi-Huong *et al.* (2023), formed the basis for the use of multidimensional indicators in the structure of the integral index. At the same time, the organisational and behavioural approach developed by T. Sohl *et al.* (2022) became the basis for including qualitative management characteristics such as structural flexibility and coordination quality in the assessment system.

The process of calculating the integrated performance indicator for managing the diversification process involved a series of consecutive steps: data collection, standardisation of indicators, determination of weighting coefficients, calculation of the integrated index, and interpretation of results. The logic was based on the concepts of a systematic approach to measuring the effectiveness of corporate governance, which require the conversion of heterogeneous economic (Return on Assets, Economic Value Added, Herfindahl-Hirschman Index), strategic (synergy index, strategic portfolio alignment, positioning in the McKinsey matrix) and organisational and managerial (flexibility of organisational structure, level of managerial competencies, adaptability of business processes) indicators into a single integrated index (Wu *et al.*, 2023).

To empirically test the methodological approach to the integrated assessment of the effectiveness of diversification process management, the cases of two multinational corporations, 3M Company (n.d.) and General Electric (GE) (n.d.), which underwent large-scale diversification transformations in 2024, were analysed. These companies were chosen as they had different diversification models (innovation-integration and restructuring-reduction), which assessed the adaptability of the proposed methodology to different strategic contexts. The study covered the period 2023-2024, which made it possible to consider the financial results and strategic consequences immediately after the restructuring decisions. A single set of indicators was applied to both companies, covering both economic and strategic criteria. Economic indicators include Economic Value Added (EVA), Return on Assets (ROA) and the Herfindahl-Hirschman Index (HHI), which characterise financial performance and the degree of portfolio concentration. Strategic indicators include the business synergy index, strategic portfolio alignment, and McKinsey matrix positioning, which reflect the level of complementarity of business lines, their alignment with corporate strategy, and competitive attractiveness. At the first stage, data collection was conducted to form an information base for each of the selected criteria. The sources were the financial statements of 3M Company (n.d.) and General Electric (n.d.). The second stage, standardisation of indicators, was aimed at eliminating the influence of different units of measurement and scales. The min-max normalisation procedure was applied, the essence of which is to bring the initial values of the indicators to a dimensionless range [0; 1] by scaling relative to the minimum and maximum values of the variable. Information about this procedure and its mathematical formulation was presented by S.G.K. Patro & K.K. Sahu (2015).

The fourth stage, calculation of the integral index, involved aggregating the standardised values, incorporating the weights. Generalised Formula (1) is as follows:

$$I_{div} = \sum_{i=0}^{n} wi \times xi, \quad (1)$$

where I_{div} – integral index of diversification management performance, w_i – weight coefficient of the i-th indicator, and x_i – standardised value of the indicator.

The final stage of interpreting the results consisted of determining the level of effectiveness of the diversification process management. To interpret the integral index of the effectiveness of diversification process management, three assessment levels were introduced: high (0.75-1.00), medium (0.50-0.74) and low (<0.50). The limits of these intervals were determined by incorporating the practice of using normalised scales in multi-criteria performance assessment models, where values exceeding 0.75 are interpreted as a sign of consistently high system performance, and levels below 0.50 as a critical threshold requiring managerial intervention. A similar scale structure was used in the corporate performance study by M. Andreasson *et al.* (2024). The information base for the study was formed based on official corporate reports of General Electric (n.d.) and 3M Company (n.d.). For General Electric, the annual reports of the subsidiaries GE Aerospace (n.d.), GE Vernova (2025), GE HealthCare technologies revenue 2020-2025 (Macrotrends, n.d.) were used. For 3M Company, the official annual report of 3M Company (n.d.) was used, which contains the company's consolidated financial and strategic data after the completion of the portfolio restructuring. Due to the lack of open data for organisational and management indicators, the integral index reflected only economic and strategic aspects.

RESULTS

Theoretical approaches to assessing the effectiveness of the diversification process management

In the classical tradition of strategic analysis, diversification is positioned as one of the key mechanisms for growth, but studies emphasise that its success depends on the alignment of strategic intentions with internal resource capabilities and external conditions (Puyt *et al.*, 2024; Cevallos & Sánchez, 2024). From an economic perspective, diversification is explained by risk and asset portfolio optimisation theories: distributing activities between unrelated or related areas can reduce profitability volatility and ensure a more even flow of income by hedging industry cycles. Socio-economic motives (reducing dependence on a single market or product, searching for new sources of income) are combined with pragmatic calculations of transaction costs and resource efficiency, which makes the economic approach useful for quantitatively assessing the expected financial results of diversification. At the same time, empirical studies show that the positive financial effect of diversification is achieved provided that there is appropriate management support and institutional support (Nguyen-Thi-Huong *et al.*, 2023; Natto & Mokoaleli-Mokoteli, 2025).

The strategic approach emphasises issues of compatibility and synergy between business units: what matters is not the number of areas, but the degree of interconnection between resources, technologies and markets, as well as the ability of corporate management to form a portfolio that enhances mutual competitive advantages. In this context, the motives for diversification (economies of scale, technology transfer, access to new competencies) were

analysed, and the role of central corporate management in shaping capital allocation policy and investment priorities is emphasised (Grant, 2018). The organisational approach determines that diversification changes the management structure of the enterprise: there is a need for new coordination mechanisms, motivation systems and knowledge transfer between departments. The quality of management procedures, the ability to conduct cross-functional coordination, adapt the organisational structure to new challenges, and develop appropriate management competencies that determine whether diversification can ensure sustainable growth or cause internal conflict (Sohl *et al.*, 2022). Thus, the modern interpretation of diversification as a strategic process involves the synthesis of economic, strategic, and organisational approaches with an additional focus on sustainability and adaptability of management. This integration creates a theoretical basis for the further development of a methodology for evaluating the effectiveness of management decisions in diversification processes.

The concept of effective management of enterprise diversification is a multidimensional economic and managerial category that combines the quantitative results of a diversification strategy and the qualitative characteristics of the processes that ensure the achievement of these results. There is a distinction between the effectiveness of diversification as a result and the effectiveness of managing the diversification process (Parsaei *et al.*, 2024). The former characterises the economic consequences of implementing the strategy: the level of profitability, growth in the market value of the enterprise, stability of cash flows or increased competitiveness. The second reflects the quality of management decisions, organisational coordination, strategic alignment, and the ability of management to adapt diversification processes to changes in the external environment (Table 1).

Table 1. Conceptual differences between diversification performance and diversification process management performance

Comparison criteria	Diversification efficiency	Efficiency of the diversification process management
Priority	Priority on the result – financial indicators, market share, capitalisation	Priority on decision-making processes, efficiency of management procedures, integration of resources
Evaluation metrics	Return on investment, return on assets, revenue growth, profitability, Herfindahl-Hirschman indices.	Indices of strategic alignment, communication effectiveness, management structure flexibility, and management competency level
Research focus	Economic performance and synergistic effect after strategy implementation	Management mechanisms that ensure the achievement of desired results, in particular, adaptation to a changing environment
Time horizon	Short- and medium-term (after completion of the diversification cycle)	Long-term, related to continuous improvement in management.
Key value for the enterprise	Increase in market value and profitability of the business	Creation of organisational capacity for innovation, flexibility and sustainable development

Source: compiled by the author based on M.S. Oladimeji & I. Udosen (2019), D.-N. Le & V.-H. Nguyen (2024)

An analysis of the characteristics presented in Table 1 demonstrates a fundamental difference between the effectiveness of diversification as a financial and economic result and the effectiveness of managing the diversification process as a managerial and behavioural category. The key difference is the focus of measurement: while the effectiveness of diversification shows what has been achieved (the final effect), the effectiveness of managing the process determines how this effect was achieved. This necessitates the use of different groups of indicators: financial ratios such as ROA or HHI are appropriate for assessing the final effect, while strategic indices of alignment, communication and managerial competencies better reflect the process aspects of effectiveness.

Thus, the management of diversification processes requires an assessment not only of the results but also of the mechanisms that lead to them. In this context, management effectiveness is a broader category that encompasses economic performance as a result of quality management decisions. This distinction provides the theoretical basis for developing an integrated approach to measuring diversification effectiveness, combining financial, strategic, and organisational-managerial approaches. A generalised description of these approaches is presented in Table 2.

Table 2. Comparative analysis of theoretical approaches to assessing the effectiveness of diversification process management

Approach	Primary contents	Benefits	Challenges
Financial and economic	Measuring the effectiveness of diversification through financial indicators (ROA, ROI, EVA, Tobin's Q)	Objectivity, quantitative measurability, and availability of data for comparison	Does not cover management aspects and external environment dynamics; it lags in reflecting the consequences of management decisions.

Table 2. Continued

Approach	Primary contents	Benefits	Challenges
Strategic	Assessment of business portfolio balance, synergy and strategic alignment (Boston Consulting Group (BCG) and McKinsey matrices)	Incorporates long-term orientation, strategic interaction between areas, and synergy	Subjectivity of assessments; complexity of application for multi-vector structures; limited quantitative interpretation
Organisational and managerial	Analysis of management process efficiency: structural flexibility, coordination quality, and innovation.	Incorporates human and process factors; can be used for assessment of the prerequisites for sustainable development	High labour intensity; requires expert assessments and quality data

Source: compiled by the author based on O. Zhylinska *et al.* (2017), K.S. Adesina (2021), F. Yanine & Z. Campos (2023)

A comparison of approaches shows that none of them provides a comprehensive reflection of the effectiveness of the diversification process management. The financial and economic approach is useful for quantitative assessment of results but does not explain the reasons for their achievement. The strategic approach complements the analysis by revealing the synergy between business areas but cannot reflect the effectiveness of management procedures. The organisational and managerial approach focuses on the processes that shape the managerial potential of diversification but needs to be integrated with quantitative methods. Therefore, to obtain a comprehensive assessment, it is advisable to use an integrated approach that combines elements of all three concepts: financial results, strategic alignment, and management quality, which meets the requirements of the modern paradigm of sustainable corporate performance management.

Methodological approach to integrated assessment of the effectiveness of enterprise diversification management

The formation of a methodological approach to the integrated assessment of the effectiveness of diversification process management requires a conceptual combination of quantitative and qualitative parameters that reflect both economic results and management dynamics and strategic consistency of enterprise development. The modern scientific paradigm is transitioning from the dominance of exclusively financial and economic metrics in favour of complex models in which performance is viewed as a multidimensional characteristic that integrates cost, behavioural, and structural-organisational aspects (Marshall *et al.*, 2024). In this context, the key task is to build a system of criteria capable of reflecting the relationship between the results of diversification strategies and the quality of management decisions. The selection of criteria should be based on the principles of relevance, measurability and reproducibility, which ensures the possibility of further testing of the methodology on empirical cases of enterprises in various industries. Given the interdisciplinary nature of diversification, it is advisable to identify three interrelated blocks of indicators: economic, strategic, and organisational and managerial, each of which reflects a specific component of the effectiveness of the diversification process management (Table 3).

Table 3. Criteria for integrated assessment of the effectiveness of diversification process management

Criteria group	Criteria	Analytical rationale and potential for use in empirical cases
Economic	ROA	Reflects the ability of assets to generate profit; particularly informative when analysing diversification in capital-intensive sectors
	EVA	A key indicator of value creation that considers the cost of capital provides a long-term assessment of the value of diversification projects
	HHI	Determines the degree of concentration of the business portfolio; which can be used for assessment of the structural balance of business areas
Strategic	Business synergy index	Reflects the complementary effect between areas, particularly in technological, logistical and marketing processes; forms an overview of the strategic integrity of the portfolio.
	Strategic portfolio alignment	Shows the alignment of diversification directions with corporate priorities, the level of harmonisation of resource potential
	Positioning in the McKinsey matrix	Can be used for assessment of the balance between market growth rates and the competitive strength of business areas; used for visualisation and decision-making regarding portfolio restructuring
Organisational and managerial	Flexibility of organisational structure	Shows the company's ability to quickly change its management structure to fit new directions, necessary for adaptive strategies
	Level of managerial competencies	Determines the quality of management decisions by assessing the experience, education and effectiveness of managers
	Adaptability of business processes	Demonstrates the ability of the enterprise to modify processes under the influence of external factors of the market, technologies, and regulations

Source: compiled by the author based on P. Arte & J. Larimo (2022), H.E. Yildiz *et al.* (2023)

The proposed system of criteria forms the basis for constructing an integrated index of diversification process management performance. The system is characterised by an interdisciplinary nature and a focus on practical verification. Economic indicators reflect the financial results of decisions and ensure comparability between enterprises. Strategic criteria demonstrate the level of coordination and synergy effect, while organisational and managerial criteria demonstrate the internal capacity to implement diversification strategies. This three-component structure can be used not only to assess actual effectiveness, but also to diagnose the potential for sustainable development and the enterprise's resistance to market fluctuations. The process of calculating the integral indicator provides a multidimensional diagnosis of the effectiveness of diversification management, combining short-term economic results with long-term parameters of management stability. The proposed algorithm is flexible and suitable for use in corporate analysis.

Verification of the developed methodology for integrated assessment of the effectiveness of diversification process management requires testing on real companies undergoing active transformation or portfolio restructuring. In 2024, 3M Company completed a spin-off of its Health Care business, forming a separate company called Solventum (McColl, 2024). This decision was strategic in nature, as it involved optimising the portfolio structure to increase the emphasis on core activities such as industrial technologies, safety and consumer goods. The separation of one of the key divisions is defined as a form of structural diversification, where the company reduces the number of business areas while strengthening its financial stability and reallocating resources to invest in innovative sectors. In addition, in 2024, 3M Company officially announced an increase in investment in research and development (R&D) to enter high-growth markets and implement an innovation diversification strategy for 2025-2027. This involves a transition to an adaptive portfolio management model, where the company forms new areas of development based on technological innovation and environmental sustainability. This is in line with trends in innovation management in global business (Circular Collective, 2025).

Another example for testing the methodology is GE, which completed a major structural transformation in 2024, splitting into three public companies: GE Aerospace (n.d.), GE Vernova (2025) and GE HealthCare (n.d.). This step was the result of a long-term restructuring strategy aimed at improving management efficiency by separating independent business units with clear strategic guidelines (Charman, 2024). This diversification strategy, while reductive in form, creates conditions for deeper management control within each area and increases the transparency of the corporate structure. To quantitatively verify the proposed methodology, a comparative assessment of the performance indicators of selected companies was conducted based on official reports for 2024. At this stage, the integrated assessment is based on a combination of economic and strategic criteria that reflect both the financial performance of management decisions and the degree of alignment of diversification strategies with overall corporate goals (Table 4).

Table 4. The significance of criteria for the integrated assessment of the effectiveness of diversification process management at 3M Company and GE, 2024

Company	EVA (billion USD)	ROA (%)	HHI	Synergy of business areas (0-1)	Strategic portfolio alignment (0-1)	McKinsey/GE positioning (0-1)
3M Company	6.1	10.2	0.25	0.80	0.90	0.85
GE	7.5	8.5	0.30	0.75	0.85	0.80

Source: compiled by the author based on GE Aerospace (n.d.), Macrotrends (n.d.), 3M Company (n.d.), GE Vernova (2025)

The results of the integrated assessment show that 3M Company demonstrates higher overall performance in managing diversification processes, as confirmed by an integrated index value of 0.857, while for GE, this figure is 0.671. This reflects differences in portfolio structure, strategy implementation stages, and levels of adaptability following restructuring. GE's lower ROA and HHI indicators are a direct result of the company's large-scale split in 2024 into three separate public entities: GE Aerospace, GE Vernova, and GE HealthCare. This transformation caused a temporary loss of economies of scale and synergies between business lines, as well as a decline in return on assets, which is typical for transitional phases of restructuring. However, the maintenance of high strategic indicators (alignment – 0.85; positioning – 0.80) indicates the potential for a recovery in efficiency once the new corporate structure has stabilised.

For 3M Company, on the contrary, the results reflect the successful implementation of innovative diversification. The spin-off of the Health Care division into a new company, Solventum, in 2024 made it possible to concentrate resources on highly profitable segments, such as industrial materials, safety, and electronics and to increase the flexibility of the portfolio. The combination of high strategic (0.80-0.90) and economic indicators (EVA – 6.1; ROA – 10.2%) ensured an optimal balance of short- and long-term efficiency, which explains its higher integral index (0.857).

To ensure comparability of indicators that differ in nature and scale of measurement, they were standardised using the min-max normalisation procedure. Based on the normalised data, an integral index of diversification process management performance was calculated for each company, as shown in Table 5 (Formula 1).

Table 5. Normalised values of criteria and integrated performance index for diversification process management for 3M Company and GE, 2024

Company	EVA (billion USD)	ROA (%)	HHI	Synergy of business areas (0-1)	Strategic portfolio alignment (0-1)	McKinsey/GE positioning (0-1)	Integral index (I_{div})
3M Company	0.87	0.85	0.80	0.80	0.90	0.85	0.857
GE	1.00	0.00	0.00	0.75	0.85	0.80	0.671

Source: compiled by the author

An analysis of the results of the integrated assessment shows a difference in the level of effectiveness of the diversification process management between 3M Company and GE. According to the results of the integrated index calculation, the value for 3M Company is 0.857, while for GE it is 0.671, reflecting differences in the pace of adaptation, strategic portfolio alignment, and current financial performance in the post-restructuring period. 3M Company demonstrated higher results thanks to an effective combination of short-term financial and long-term strategic effects. The spin-off of the Health Care division into a new company, Solventum, in 2024, optimised the corporate structure of 3M Company, shifting resources to highly profitable segments (industrial materials, safety, electronics) and improving operational efficiency. High EVA and ROA values confirm the company's financial stability and ability to create value added, incorporating the cost of capital, while increased strategic alignment and synergy between business lines reflect the flexibility and innovation of the portfolio.

GE, on the other hand, has a lower integrated indicator, which is due to the impact of a large-scale restructuring completed in 2024. The division of the company into three public structures, GE Aerospace, GE Vernova and GE HealthCare, led to a decrease in ROA and a temporary loss of economies of scale, which is reflected in lower normalised values. Although GE's EVA remains relatively high, concentration ratios (HHI) indicate less diversification flexibility in the short term. At the same time, strategic criteria, in particular business synergy, remain stable, demonstrating that the new corporate governance model is aimed at strengthening specialisation and increasing efficiency within individual business units. The results should be interpreted, incorporating the methodological limitations of the study. In particular, due to the lack of complete data on organisational and management criteria, the integrated index reflects only the economic and strategic aspects of performance. Therefore, further verification of the methodology requires expanding the database with organisational metrics, which can improve the completeness of the assessment of the adaptability and sustainability of corporate systems in diversification processes.

The results of testing the methodology on the example of 3M Company and GE confirm its potential as a tool for strategic analysis and management audit in the context of diversification processes. The proposed approach can be used for an integrated assessment of not only the current effectiveness of the portfolio, but also the consistency of economic and strategic decisions in dynamics. The normalisation of indicators and the construction of an integrated index create conditions for comparing companies with different scales of activity and asset structures, which is important in the strategic planning process.

The application of this methodology can be useful in several areas. First, in the field of strategic planning, it can determine the optimal proportions between the main business areas, assessing the synergy between departments, and forecasting the potential effect of restructuring. Based on the index approach, management can quantitatively model the impact of changes in the portfolio structure on the overall performance of the company, incorporating both economic and strategic factors. Secondly, in the context of management audit, the methodology serves as a diagnostic tool that can identify imbalances between financial indicators, strategic alignment and organisational flexibility. Comparing indices over time or between individual business units can be used to assess the effectiveness of management decisions and to identify deviations promptly that may indicate inconsistencies in the implementation of the diversification strategy. Thirdly, the methodology can be used in the process of making management decisions on the choice of diversification directions. It can justify the feasibility of entering new markets or reducing existing segments based on an integrated assessment of the performance and strategic compatibility of assets. For companies transforming, such an assessment can serve as a basis for determining development priorities, optimising capital investments and forming a balanced portfolio.

At the same time, from a scientific point of view, the methodology creates opportunities for further expansion of the system of criteria, in particular through the integration of organisational and management metrics and indicators of innovative activity. This will increase the analytical depth of the model, ensure a comprehensive assessment of corporate sustainability, and transform the index into a multidimensional tool for supporting strategic decisions. Thus, testing has confirmed that the proposed approach is flexible, practically oriented, and can be adapted for use in both corporate planning and academic research on diversification management.

DISCUSSION

An analysis of theoretical approaches to assessing the effectiveness of diversification process management confirmed that integrating financial, economic, strategic, and organisational management approaches can be used for a

comprehensive assessment of the effectiveness of a diversification strategy. The results of the study are consistent with the conclusions of N.A.A. Almotawkel & M.A.S. Alkohali (2025), demonstrating that effective diversification management requires simultaneous control of financial indicators and optimisation of organisational processes. The study highlighted that underestimating the role of internal coordination and structural adaptability can lead to a decrease in synergy between business areas, which coincides with the limitations of the financial approach identified in the study. Thus, the need for comprehensive integration of economic, strategic and organisational indicators to improve the effectiveness of diversification process management is confirmed. The study by E. Gross-Gołacka *et al.* (2024) addressed the socio-economic aspect of diversification, in particular, on the need to consider the human factor and management coordination mechanisms in multi-vector structures. Their results are consistent with the analysis conducted, which showed the significance of assessing the level of managerial competencies and communication effectiveness to achieve a sustainable result of the diversification strategy. At the same time, it is worth noting that the approach of E. Gross-Gołacka *et al.* does not provide a quantitative assessment of financial results, which confirms the conclusion about the need to combine strategic and economic metrics.

The study by M. Vasuki *et al.* (2025) assessed the effectiveness of portfolio diversification using statistical correlation metrics, which quantitatively reflected risk reduction and income stabilisation. The data obtained correlates with the conclusions of this study on the financial and economic approach, which can be used for the quantitative measurement of diversification performance through ROA, ROI, and EVA. At the same time, it is worth noting that statistical metrics do not consider the management potential and strategic alignment of business areas, which coincides with the identified limitations of the financial and economic approach in the integrated assessment of effectiveness. Thus, a comparison of the results obtained with current research confirms that to adequately assess the effectiveness of diversification process management, it is necessary to combine financial, strategic and organisational-management criteria. The study determined that each of the approaches separately has limitations, and their integrated use can be used for the simultaneous consideration of economic results, synergy between business areas and the quality of management procedures.

The developed methodological approach, which combines quantitative and qualitative indicators, conceptually correlates with the conclusions of T. Almulhim *et al.* (2024), proposing a two-stage Data Envelopment Analysis model for a comprehensive assessment of enterprise performance in terms of operational, financial and sustainability performance. The study substantiated the need to abandon monodimensional financial metrics in favour of integrated indicators that can address the interrelationship between different performance measures. The results obtained in this article confirm the relevance of this approach, since the integrated diversification performance index also combines economic and strategic parameters, enabling a comprehensive comparative analysis between companies with different portfolio structures.

Similar to the approach of A. Dauerer (2025), emphasising the growing role of non-financial indicators, particularly ESG components, in measuring corporate performance in a systematic literature review, the results of this study demonstrate the need to expand traditional assessment systems. A. Dauerer emphasised that the inclusion of non-financial criteria increases the validity of the results and further contributes to the analysis of the sustainability of business models. In the case of this study, the integration of organisational and managerial criteria into future versions of the methodology could be a similar step that would improve the analytical accuracy of the index and reflect not only performance but also the quality of management decisions. Thus, the developed approach conceptually coincides with the argument of A. Dauerer regarding the transition to complex, multi-factor models of performance evaluation.

The results of the study also partially correlate with the conclusions of an analysis by T. Kretschmer & P.C. Symeou (2024) on the impact of absorption capacity components on the effectiveness of related and unrelated diversification. The authors proved that knowledge, technological resources, and managerial competencies are key factors determining the success of diversification strategies. The obtained results confirm the significance of strategic portfolio alignment and business synergy as factors ensuring the stability and flexibility of the corporate system. At the same time, in contrast to T. Kretschmer & P.C. Symeou, the proposed approach emphasises not only the cognitive resources of the enterprise, but also its structural and economic characteristics, which broadens the comparison between different sectors and business models.

The study by D.M. Shukla & S. Kumar (2023) also confirmed the relevance of the conclusions of this study. The authors proved that in knowledge-intensive industries, the impact of diversification on performance depends on the level of absorption capacity of the organisation, which acts as a moderator of the relationship between business expansion and management efficiency. A comparison of the results shows that strategic alignment and synergy of business areas, assessed within the proposed methodology, reflect similar patterns: companies with a higher level of strategic alignment demonstrate better adaptability and financial stability. This coincides with the conclusions of D.M. Shukla & S. Kumar regarding the role of management knowledge in increasing the sustainability of diversification strategies.

At the same time, the results partially disagree with the conclusions of A. Valero (2024), in the research of diversification strategies in the real estate sector, determined that excessive differentiation of business areas can lead to a decrease in overall profitability due to a loss of focus in management processes. However, the results of testing the

developed methodology on the example of 3M Company and GE show that diversification, provided there is a high degree of strategic coordination and control over the portfolio structure, does not reduce efficiency but, on the contrary, ensures greater flexibility and potential for innovative development. This indicates the need for a differentiated approach to assessing the effectiveness of diversification depending on industry characteristics and the scale of the enterprise.

Lastly, the results are consistent with the approach of Y.-M. Wei (2025) is developing a hybrid multi-criteria business model evaluation system based on hierarchy analysis and fuzzy logic methods. The study emphasised the importance of combining quantitative indicators with qualitative expert assessment for strategic decision-making in complex corporate systems. The study applied a similar principle of constructing an integral index based on normalised quantitative indicators with the possibility of further expert interpretation, confirming the effectiveness of multidimensional models for analysing diversification processes.

Thus, the study confirmed consistency with leading contemporary scientific approaches to comprehensive assessment of management performance, while offering unique conceptual novelty: the integration of economic, strategic and organisational criteria into a single index system.

CONCLUSIONS

The theoretical analysis showed that diversification of a company's activities is not only a tool for increasing profitability, but also a complex management process, the effectiveness of which is determined by the consistency of strategic, financial and organisational decisions. Clarification of the category "effectiveness of diversification management" distinguished between two key dimensions: the effectiveness of diversification, which focuses on final financial indicators, and the effectiveness of diversification management, which is related to the quality of management decisions and processes. This distinction is methodologically substantial for building an assessment system focused not only on financial outcomes but also on the management factors that shape them. A comparative analysis of existing theoretical approaches – to financial, economic, strategic, and organisational management – has shown that none of them individually provides a comprehensive overview of the effectiveness of the diversification process management. It is advisable to develop an integrated approach to assessing the effectiveness of the diversification process management that combines the advantages of the three concepts mentioned above. Such an approach can be used for the simultaneous consideration of financial performance, strategic alignment and the quality of management procedures, which meets the modern requirements of the concept of sustainable corporate performance management and creates a basis for the further development of practical methods for integrated assessment.

A methodological approach to the integrated assessment of the effectiveness of enterprise diversification management has been developed and tested. The feasibility of using a multi-criteria model that combines economic, strategic, organisational and management indicators into a single assessment system has been confirmed. This approach provides a comprehensive reflection of the effectiveness of diversification strategies, which can be used for the assessment not only of financial results but also of the degree of consistency of management decisions with the strategic priorities of the enterprise. The methodology has demonstrated high analytical sensitivity to structural transformations in corporate portfolios, as confirmed by the results of testing on the example of 3M Company and GE. In particular, 3M Company received an integral value of 0.857, indicating a high level of diversification portfolio balance, while GE received a value of 0.671, reflecting a decline in diversification management performance due to the restructuring processes of 2023-2024. The integral index has practical value as a tool for strategic planning, management audit and decision-making on diversification. It can be used for quantitative assessment of portfolio balance, modelling the consequences of changes in the structure of business areas, identifying potential sources of growth and detecting risks of excessive concentration. For management, this creates the possibility of making more informed decisions regarding the optimisation of corporate structure, the redistribution of investments, and the adjustment of strategic priorities. From a scientific and methodological perspective, the developed approach forms the basis for further research aimed at improving the assessment of the effectiveness of diversification process management.

The study was limited by the lack of publicly available data for direct assessment of organisational and management indicators, such as communication efficiency, structural flexibility and business process adaptability. In this regard, the integrated index of diversification management performance was calculated based on economic (ROI, ROA, EVA, concentration indices) and strategic (business synergy, strategic portfolio alignment, positioning in the McKinsey matrix) criteria. Further research should expand the analytical base of the integrated approach by including organisational and management indicators, which can ensure a comprehensive assessment of not only the results but also the internal processes of implementing diversification strategies.

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Олег Глушко
Аспірант
Державний торговельно-економічний університет
02156, вул. Кіото, 19, м. Київ, Україна
https://orcid.org/0009-0005-5170-8011

Оцінювання результативності управління процесом диверсифікації діяльності підприємства

Анотація. Метою статті була розробка та апробація інтегрального підходу до оцінювання результативності управління процесом диверсифікації. У дослідженні застосовано системно-структурний, порівняльно-аналітичний і інтегрально-оцінювальний підходи, що забезпечили комплексне вивчення взаємозв'язків між економічними, стратегічними та управлінськими аспектами диверсифікації, а також побудову інтегрального індексу результативності з етапами нормалізації, вагового оцінювання та агрегування показників, апробованого на кейсах корпорацій 3M Company та General Electric. Встановлено, що ефективність управління диверсифікаційними процесами підприємства визначається економічними результатами, якістю управлінських процедур та стратегічною узгодженістю бізнес-напрямів. Виявлено, що інтеграція всіх трьох підходів забезпечує цілісну оцінку ефективності диверсифікації. Було розроблено методичний підхід до інтегрального оцінювання результативності управління диверсифікацією діяльності підприємства. Запропоновано систему із трьох груп критеріїв, що забезпечує комплексне відображення результатів диверсифікаційних стратегій. На основі нормалізації даних і зваженого агрегування показників побудовано інтегральний індекс результативності управління, апробований на прикладі компаній 3M Company та General Electric за 2024 рік. Розрахунки показали, що 3M Company продемонструвала вищий інтегральний індекс результативності управління процесом диверсифікації (0,857) порівняно з General Electric (0,671). Незважаючи на нижче значення Economic Value Added (6,1) порівняно з General Electric (7,5), структура портфеля 3M Company залишається більш диверсифікованою (нижчий Herfindahl-Hirschman Index – 0,25 проти 0,30), що свідчить про вищу гнучкість і меншу концентрацію бізнес-напрямів. Отримані результати можуть бути використані для діагностики ефективності диверсифікаційних стратегій у корпоративному управлінні, а також для розроблення інструментів стратегічного моніторингу та оптимізації бізнес-портфелів компаній

Ключові слова: фінансова результативність; стратегічна узгодженість; якість управлінських рішень; інтегральний індекс; бізнес-портфель

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Bohdan Dovhyi*

Master
Bohdan Khmelnytsky National University of Cherkasy
18031, 81 Shevchenko Blvd., Cherkasy, Ukraine
https://orcid.org/0009-0003-0789-1651

Nataliia Zachosova

Doctor of Economics, Professor
Bohdan Khmelnytsky National University of Cherkasy
18031, 81 Shevchenko Blvd., Cherkasy, Ukraine
https://orcid.org/0000-0001-8469-3681

Economic efficiency of management decisions in the implementation of cultural projects: Manager's competencies and soft skills as key factors

Abstract. The cultural sector is making a growing contribution to the global economy, but remains vulnerable to crises and structural risks. In conditions of instability, there is a growing need for effective management of cultural projects, which makes it relevant to study the impact of managerial and social competencies on the achievement of sustainable economic results. The aim of the study was to analyse the relationship between the managerial competencies, their soft skills and the economic efficiency of cultural projects. Research methods: critical review and content analysis of professional literature, in particular materials published in 2020-2025, logical-analytical and comparative-synthetic approaches. It was found that the managerial competencies of cultural managers have a decisive influence on the effectiveness of cultural initiatives. The leading role of soft skills, such as emotional intelligence, adaptability and strategic communication, in a multicultural environment has been confirmed. It has been established that a high level of cultural intelligence (CQ) contributes to reducing conflict, improving communication within teams and increasing project effectiveness. The effectiveness of strategic management tools (SWOT, PESTLE, Balanced Scorecard) for long-term cultural projects has been analysed. Management tools are proposed that enable a systematic approach to planning and evaluating cultural initiatives, which provides opportunities to strengthen the institutional capacity of cultural organisations and increase their social and economic impact on the country's economic development. The practical value of the study lies in identifying specific management competencies that contribute to the successful implementation of cultural projects in complex socio-cultural conditions. The results obtained can be used to develop training programmes for cultural managers, particularly in the field of intercultural communication and leadership

Keywords: management competencies; cultural intelligence; analytical tools; creative industries; strategic thinking; intercultural sensitivity; evaluation of effectiveness

INTRODUCTION

In modern conditions, the sphere of culture and art stimulates qualitative transformations of economic processes, promotes the introduction of innovations in related sectors, and creates an environment for improving well-being. According to UNESCO (2022), the cultural sector accounts for about 3.1% of global gross domestic product and

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*Corresponding author

over 6% of global employment. It plays an important role in achieving the sustainable development goals that most countries strive for. At the same time, the COVID-19 pandemic has revealed the vulnerability of the cultural sphere to external crises, which has led to the need to increase the resilience of its management. According to a UNCTAD report (2022), the creative economy is showing dynamic growth, especially in times of instability. In 2022, global exports of creative services reached USD 1.4 trillion, 29% more than in 2017, and the share of such services in total global exports reached 19%. The leading areas remain software, scientific research, advertising, audiovisual and information services, while the share of cultural and recreational services remains insignificant. These data indicate the expansion of creative industry markets, but also point to structural imbalances within the cultural sector. The regional distribution of creative services exports in 2022 was as follows: Europe – USD 720 billion; Asia – USD 359 billion; North America – USD 274 billion. It should be noted that the largest exporters of creative services in 2022 were: United States of America – USD 244 billion; Ireland – USD 231 billion; United Kingdom – USD 87 billion; Germany – USD 79 billion; China – USD 67 billion (UNCTAD, 2024). These data demonstrated the growing role of the creative economy in world trade and highlighted its importance as a driver of economic growth and innovation.

The scientific community is actively studying the impact of managerial competencies on the success of projects, particularly in the cultural sphere. Among the main aspects analysed by researchers are: the role of interpersonal skills, intercultural sensitivity, professional maturity, managerial competencies and the ability to manage strategically in the context of the growing complexity of managing cultural initiatives. R. Sayed (2023), building on the work of his predecessors, emphasises that project thinking and interpersonal communication are basic soft skills for cultural project managers: they allow not only to organise work processes, but also to adapt management to the creative nature of the tasks. In turn, the Project Management Institute (2023) report confirms the critical importance of power skills: emotional intelligence, adaptability, critical thinking, leadership, and effective communication. Over 90% of organisations that have integrated the development of these skills into their HR strategy have demonstrated better results in terms of economic benefits, compliance with time and financial constraints, and the overall level of maturity of management practices.

P. Ochoa Pacheco *et al.* (2023), as a result of a systematic analysis of the role of managerial competencies, in particular leadership skills, in management, concluded that they are important for ensuring the success of projects. Based on an analysis of more than 80 scientific publications from the Scopus and Web of Science databases, a correlation was found between the level of development of management competencies and the achievement of planned project results. Emphasis is placed on the fact that the specifics of managing cultural projects remain under-researched. This scientific vacuum highlights the need to study the impact of soft skills and a competency-based approach on processes in the cultural sector.

O.M. Umuteme & W.M. Adegbite (2023) focus on intercultural competence as a factor that contributes to the harmonisation of team interaction, conflict mitigation and overall productivity growth. In cultural projects, which are often implemented in a cross-cultural environment – with the participation of international partners or representatives of different ethnic groups – intercultural sensitivity and the ability to engage in intercultural dialogue are essential for effective management. This type of competence allows for the consideration of socio-cultural contexts that directly influence the effectiveness of management decisions and the quality of team interaction.

An interesting empirical study initiated by R.D. Vlahov *et al.* (2016) demonstrates that cultural diversity significantly shapes managerial competencies. Using the Mediterranean region as an example, it has been proven that intercultural competence, as a social skill, allows managers to effectively implement projects in a multicultural environment, avoiding organisational barriers and reducing the risk of misunderstandings. B. Bogoeva (2020) focused on the need to develop adaptive management skills in the context of the globalisation of cultural processes and proposed a classification of competencies for cultural project managers, with particular attention paid to the ability to conduct interdisciplinary communication, flexibility of thinking and critical analysis, which are also among the social skills currently in demand in various professions. The role of knowledge management as a mediator between manager competencies and project results is also mentioned in contemporary literature. Social skills such as communication, teamwork, conflict management and the ability to adapt quickly to change have an impact on professional success (Ihnatyshyn & Demian, 2019; Hashim *et al.*, 2024).

The concept of managerial competencies in project management has its own path of evolution. There are three blocks: technical, behavioural and contextual competencies, but there is an undeniable need to develop mixed models for evaluating manager competence, especially in rapidly transforming areas such as culture and the creative industry (Papp-Horváth *et al.*, 2024). Thus, contemporary scientific thought offers a multi-vector approach to understanding managerial competencies in the field of cultural and art project implementation, but there is still a need for a more in-depth analysis of the specifics of using social skills in the context of the creative sector, given its socio-cultural sensitivity, funding instability, and multidisciplinary project teams. In this context, the aim of the study was to clarify the links between managerial competencies and the effectiveness of cultural project implementation.

The research methodology was based on a systematic review of scientific articles and reports from 1992 to 2025, logical-analytical and comparative-synthetic approaches, as well as content analysis of publications from international scientometric databases. The study also included a

retrospective analysis of key works on project management and cultural intelligence since 1992, which made it possible to trace the evolution of theoretical approaches to managerial competencies in the field of culture. To ensure the validity of the results, a case analysis of international cultural projects from different geographical regions (USA, EU, Africa) was carried out, which made it possible to identify universal and context-specific management practices. The comprehensive methodological approach also involved the use of statistical analysis of project performance indicators (ROI, coefficient of determination R^2), which provided a quantitative assessment of the impact of cultural intelligence on the success of cultural initiatives.

The role of managerial competencies in improving the economic efficiency of cultural projects

The competencies of cultural project managers can be divided into three groups: technical, contextual and behavioural (Papp-Horváth *et al.*, 2024). The typology of competencies of managers in the field of culture is presented in Table 1.

Table 1. Typology of competencies of managers in the field of culture

Type of competencies	Description of competencies	Connection with economic efficiency	Key sources analysed
Technical	Knowledge of the specifics of processes at the development, planning and financing stages. Provides a professional foundation: assessment of tasks, resources, forecasting results, management decisions at all stages.	Ensure objectivity in planning and implementation, minimise costs, and increase efficiency.	International Project Management Association (2015)
Contextual	Understanding of cultural specifics, ethical management, intercultural sensitivity; ability to work with stakeholders (government agencies, community, contractors).	Strengthen trust in the project, facilitate quick resolution of issues, optimise interaction, and reduce risks and delays.	L. Crawford (2005)
Behavioural	Communication, leadership, management style, emotional stability. Ability to work "by the rules" and manage interpersonal relationships.	Build reputation, promote harmonious teamwork, and increase the effectiveness and resilience of project participants to stress and conflict.	M. Gruden & A. Stare (2018)

Source: developed by the authors based on research by V. Papp-Horváth *et al.* (2024)

This competency framework is supported by other studies. In some cases, the emphasis is on strategic thinking, visionary thinking, and adaptability as the core leadership competencies of a manager (Ahmed *et al.*, 2021). The development of soft skills significantly increases the effectiveness of project implementation (Awan *et al.*, 2015). In the context of culture, the importance of communication skills as the foundation of a cultural manager's professionalism is emphasised (Diba, 2018). Thus, the combination of technical knowledge, contextual thinking and behavioural skills creates a multidimensional management model that directly influences the economic performance of a cultural project. Modern managers in the field of culture possess the above-mentioned competencies and also develop other soft skills: proactivity, self-organisation, digital skills, civic and entrepreneurial competencies. However, at the scientific level, questions are occasionally raised about the key competencies of a cultural manager: is there a specific established list of them, given that employees in this field must be multifunctional in most professional issues and aspects (Dubyna & Koval, 2020).

Research in the field of leadership and management competencies unanimously indicates that cultural project managers must possess a high level of flexibility, adaptability, and focus on self-development. The continuous professional development of project managers is a prerequisite for improving the effectiveness of the entire organisation, especially in a dynamic environment (Ananthathmula, 2010). M. Gruden & A. Stare (2018) emphasise that behavioural competencies such as emotional stability, communicative openness and readiness for change significantly increase the effectiveness of management decisions. However, only a combination of personal and emotional-intellectual characteristics allows for strategic effectiveness in the long term (Gardner & Stough, 2002). It is advisable to evaluate a manager's level of competence not only by the presence of relevant skills, but also by the results of implemented projects, which are measured by economic indicators (ROI, budget utilisation, investment attraction) and feedback from project team members (McBull, 2017; Hrynchak & Motuzka, 2023). Thus, developing strengths and working on weaknesses is not only a professional necessity for specialists, but also a prerequisite for ensuring the stable economic efficiency of cultural projects. Management competencies directly influence the achievement of economic results in the implementation of cultural projects. The main indicators for evaluating the effectiveness of management decisions include: timeliness of implementation, optimal use of the budget, level of investment attracted, return on investment (ROI), audience growth and long-term social impact (Fig. 1 and Fig. 2).

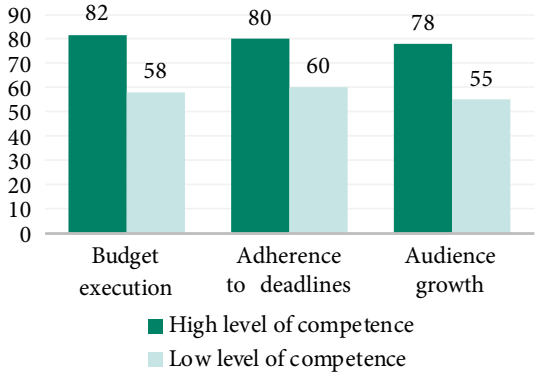

Figure 1. Comparison of qualitative results of cultural projects depending on the level of managerial competencies

Source: developed by the authors based on research by F.A. Mir & A.H. Pinnington (2014), F.Y. Ellis *et al.* (2023), M.Z. Hashim *et al.* (2024)

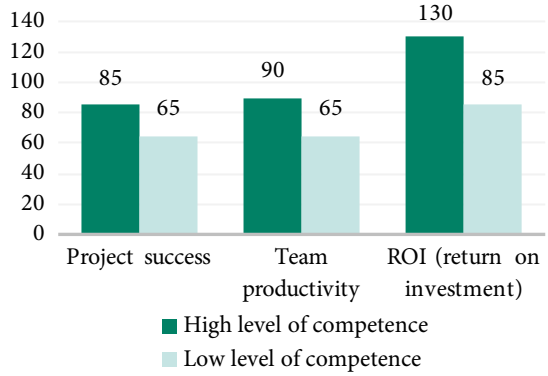

Figure 2. Achievement of planned economic indicators in cultural projects depending on the managerial competencies

Source: developed by the authors based on research by S. McBull (2017), F.Y. Ellis *et al.* (2023) K. Sima (2024)

Management competencies also influence the return on investment (ROI), project completion within budget and on time, and the attraction of extra-budgetary funding. Researchers emphasise that a high level of communication and the ability to work with information flows enable managers to avoid typical financial losses and reduce administrative costs (Hashim *et al.*, 2024). Contextual competencies related to understanding the cultural environment help art managers make strategically sound decisions about the format, partnerships, and location of cultural initiatives, which directly affects the level of income and the return on investment of cultural events. The combination of technical and behavioural competencies allows for stable economic performance in unstable environments, such as culture (Papp-Horváth *et al.*, 2024). An example of this approach is the case study presented in the study (Vlahov *et al.*, 2016), where cultural projects implemented in regions with a high level of ethnic diversity achieved better financial results because managers demonstrated a high level of intercultural competence. Cultural initiatives not only maintained planned profitability but also ensured increased economic activity in related sectors, such as hotels, restaurants, and souvenirs. The sequence of this process is shown in Figure 3.

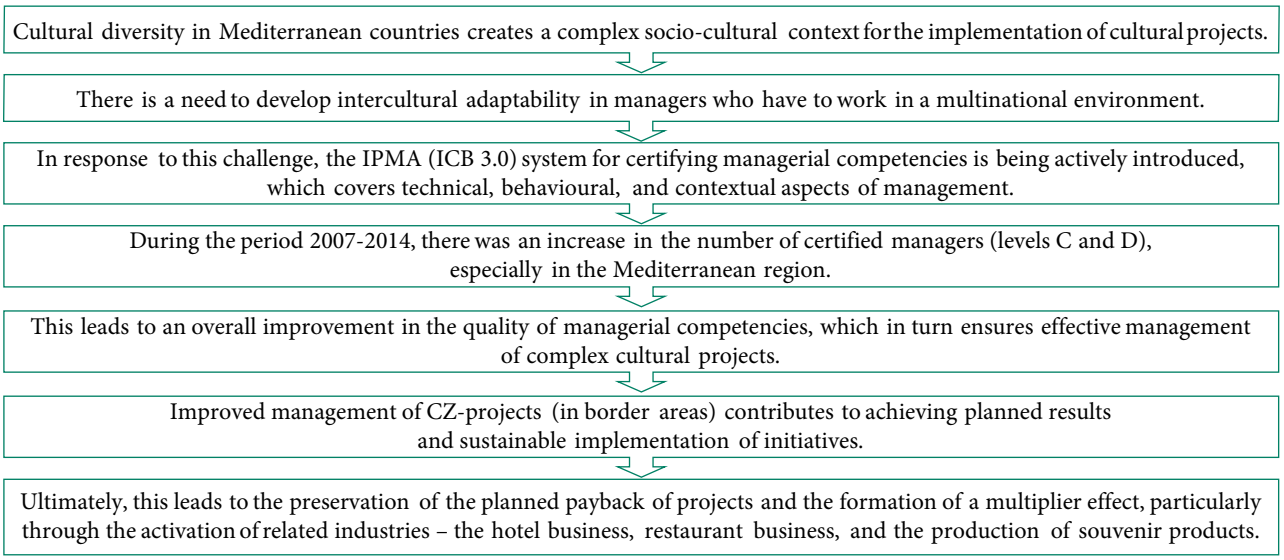

Figure 3. Sequence of influence of managerial competencies on the multiplier effect in the implementation of cultural projects

Source: developed by the authors based on research by R.D. Vlahov *et al.* (2016)

Thus, a manager's leadership skills are not only an internal resource for the team, but also a direct factor influencing the economic metrics and results of the project. The successful implementation of cultural projects largely

depends on the manager's ability to adapt to cultural diversity, communicate effectively, and use modern technologies to integrate different cultural groups. The Culture in Action project (Chicago, USA), described by FasterCapital (2025), was an initiative between the Chicago Public Art Group and eight other community organisations. Their goal was to create public artworks that reflect social issues relevant to local communities. The project leaders demonstrated a high level of cultural competence by involving residents in the process of creating art, which contributed to increased civic engagement and the development of local communities. This study analyses other examples of global projects (Table 2).

Table 2. Distribution of examples of global cultural projects by geography and managerial social competencies

Project name	Project geography	Soft skills (management competencies)
Ten Thousand Ripples	10 districts of Chicago and Evanston, USA	• Ability to facilitate dialogue in the community; • Emotional intelligence, sensitivity to context; • Coordination of inter-organisational partnerships.
Multaka	Berlin, as well as 29 museums in 4 EU countries	• Intercultural communication (Arabic, Persian); • Training volunteers from migrant communities; • Network project management.
Trans Europe Halles	Headquarters in Sweden; 162 centres in more than 40 European countries	• Decentralised leadership and democratic management; • International strategic partnership; • Coordination of large networks.
Amakhosi Theatre	Bulawayo (Zimbabwe)	• Social sensitivity, culturally sensitive design; • Engaging local communities through theatre; • Management of international donor projects.

Source: developed by the authors based on research by C. Dube (1992), F.I. Johnson (2020), State Museums of Berlin (2023), Trans Europe Halles (2024)

Thus, analysis of case studies and research shows that management competencies in cultural projects cover a wide range of social skills, from facilitating dialogue to network management. Particular attention is paid to intercultural communication, emotional intelligence, and coordination of partnerships at the local and international levels. This confirmed the importance of flexible and contextually oriented approaches to management in the cultural sphere.

The article Join The Collective (2024) looked at examples of how leaders successfully overcame cultural barriers in international teams. First and foremost, it emphasises the importance of effective intercultural communication, building trust and adapting to different cultural contexts. These competencies are key to managing cultural projects in a global environment. Special attention was paid to the examples presented in the article by the Vorecol Editorial Team (2024), which explains how digital technologies have contributed to the successful integration of cultural programmes. For example, the use of online platforms has enabled managers to establish effective communication with different cultural groups, strengthen a sense of belonging and ensure a wider audience reach.

The impact of a manager's cultural intelligence on the success of cultural initiatives

Within the scope of this study, cultural initiatives were positioned as projects or events aimed at promoting cultural interaction, inclusion, innovation, and cross-cultural cooperation within an organisation or at the local or even international level. Examples of such initiatives include: launching multinational arts programmes or educational exchanges; organising cultural festivals by international teams; implementing equal opportunity policies for employees of different backgrounds (DEI, Diversity, Equity, and Inclusion principle); creating mentoring initiatives for culturally diverse countries.

In turn, cultural intelligence (CQ) is usually understood as the ability to behave and make effective decisions in a culturally diverse environment. Cultural intelligence encompasses four interrelated components that together form a manager's ability to interact effectively in a multicultural environment. Its foundation is an internal motivation for intercultural interaction, which determines the willingness and interest in establishing contacts with representatives of other cultures. An important component is also knowledge of cultural norms, customs, practices, and conventions – these are what provide an understanding of the context and rules of behaviour necessary in the field of cultural project management. Equally important is the ability to be aware of one's own biases and assumptions, i.e. reflective control over thinking and perception, which allows one to adapt flexibly to new conditions. The final element in the formation of CQ is the behavioural component, which manifests itself in the ability to change communication style, gestures, language and other behavioural responses depending on the cultural context in which project participants interact. These components allow managers to effectively adapt to different cultural environments, which is critical for successful cultural project management (Ang & Van Dyne, 2008). The possibilities for applying CQ components in real management situations are summarised in Table 3.

Table 3. Practical applications of cultural intelligence components

CQ components	Application of component
Motivational	Creating motivational training programmes to engage staff in cultural programmes. For example, a manager decides to launch a cultural exchange between teams in Europe and Asia. He strives for cooperation and is fascinated by other cultures – this increases the cohesion and effectiveness of the project, as the team sees the manager's genuine interest.
Cognitive	Researching cultural characteristics before launching exhibitions or festivals. Before holding a cultural festival, the manager studies the differences between high-context (e.g., China) and low-context (e.g., the United States) communication. This helps to avoid misunderstandings and hold the event taking into account linguistic and non-verbal nuances.
Metacognitive	Developing flexible communication goals for different audiences, for example, in co-participation programmes. During negotiations with representatives of another country, the manager reflects on their predictions and asks about the format of the discussion, which helps them to flexibly adapt their communication strategy.
Behavioural	Adapting the style of negotiation and communication method depending on the culture of the audience. For example, a manager changes their gestures, tone of voice and pace of conversation when working with engineers from Japan, which helps to build trust and effective interaction in the project.

Source: developed by the authors based on research by P.C. Earley & E. Mosakowski (2004), D.C. Thomas & K. Inkson (2009), D.A. Livermore (2015)

The results of content analysis of professional publications showed that a high level of CQ among managers contributes to increasing the effectiveness of projects, particularly in the context of international cooperation and the implementation of global initiatives. This impact is due to the ability of managers with high cultural intelligence to interact effectively with representatives of different cultural groups. The ability to establish effective communication with diverse audiences contributes to the achievement of common goals in a multicultural environment. Thanks to developed intercultural skills, art managers are able to identify potential sources of conflict in a timely manner and find ways to resolve them constructively. In addition, they successfully adapt management strategies to the specifics of a particular cultural context, ensuring the effectiveness of management decisions in a globalised environment. It is advisable to shift the focus to how CQ affects such managerial functions as communication, adaptation and conflict avoidance (Table 4).

Table 4. The impact of cultural intelligence on key management functions

Function	How CQ helps	Typical situation
Communication	The manager adapts the style of interaction – indirect or direct – in accordance with cultural norms	The American manager engages in dialogue with the Japanese team, reducing direct criticism.
Adaptation	Knowledge of cultural contexts (e.g., power distance) enables the selection of appropriate management methods	Separate management is accepted in Germany, while in Brazil the manager works inclusively.
Conflict avoidance	Cultural intelligence determines behavioural strategies – avoidance or compromise in accordance with the culture	In a project with Indian and American participants, the manager uses mediation rather than confrontation

Source: developed by the authors based on research by G. Gonçalves *et al.* (2016), I. McCollum *et al.* (2024)

The positive impact of cultural intelligence on the success of cultural projects has been confirmed in a number of studies, and this relationship can be traced by carefully analysing the content of publications devoted to this issue. The extent of the influence of CQ and EQ (emotional intelligence) on the effectiveness of international projects, taking into account the mediation factor – task interdependence and moderation – psychological contract – is characterised by such a project effectiveness indicator as R^2, or the coefficient of determination, which measures the proportion of variation in project effectiveness and is approximately equal to 0.122. This means that 12.2% of changes in project effectiveness are caused by the manager's CQ. Other indicators include: timely project completion, goal alignment, and improved team interaction (task interdependence). In other words, CQ has a significant direct impact on project effectiveness, while EQ has no direct significant impact and its effect is indirect. At the same time, task interdependence fully mediates the CQ → effectiveness relationship; CQ increases cohesion and cooperation, which in turn improves project implementation results (Muhammad *et al.*, 2024).

S. Yang *et al.* (2025) investigated how CQ affects project productivity, in particular through the dynamics of knowledge and the role of artificial intelligence. The following project performance indicators were proposed: positive knowledge development dynamics, speed of adaptation during task execution, and improved coordination of actions in multicultural teams. The results showed that CQ directly affects project success. S. Nosratabadi *et al.* (2020) set out to determine how the CQ of an organisation's leader affects organisational effectiveness, taking into account the organisational structure. The results of the study characterised performance indicators such as increased productivity, improved communication between departments, and growth in corporate results (KPIs). Thus, CQ has a direct and indirect (through structure) positive

impact on the effectiveness of an organisation's activities. Cultural sensitivity and adaptability contribute to the successful formation of partnerships and reduce the risk of misunderstandings in a multinational business environment. R. Caligiuri (2012) emphasises the importance of developing CQ for leaders who want to succeed in a global environment. Therefore, the development of cultural intelligence is a formative factor in the successful management of cultural initiatives, especially in the context of globalisation and growing cultural diversity.

Practical recommendations for cultural managers on optimising management decisions

Managing cultural projects requires an individual approach that takes into account the personal characteristics of the manager. The effectiveness of management decisions largely depends on the manager's ability to adapt their management style to their own strengths and the context of the project. This is confirmed in the scientific work of Van Dyne *et al.* (2012), who focus on personalising management style through self-reflection. Self-reflection is at the heart of the CQ development mechanism. Managers who regularly analyse their own experience in multicultural teams are better able to adapt management style to the context of the project. For example, an art manager working with Japanese and European artists rethinks their own bias towards open dialogue and adjusts their approach to interact constructively with both groups. In turn, creating a horizontal structure in the project team encourages participants to engage in the decision-making process, which increases their motivation and effectiveness. S. Nosratabadi *et al.* (2020) found that a horizontal structure enhances interaction and CQ of the leader, which ultimately increases the effectiveness of the organisation. For example, an art centre that organised an open discussion of festival scenarios achieved: +25% increase in participant activity in meetings; +15% improvement in team communication quality; 18% reduction in internal conflicts (Nosratabadi *et al.*, 2020).

Such conclusions are particularly important and relevant for cultural projects, where creative workers value participation in decision-making and recognition of their contribution to the results achieved. It is important for the art project team leader to consider the cultural, social and reputational risks that may affect the success of its implementation. Therefore, there is a need for a comprehensive approach to risk assessment that considers not only financial but also intangible aspects. To improve the effectiveness of management decisions in cultural project management, it is advisable to use a number of analytical and strategic tools. In particular, benchmarking makes it possible to study the best practices for implementing similar projects and adapt effective solutions to the specific context of a particular project. For example, research by X. Chen (2024) shows that the use of VR to preserve China's cultural heritage significantly increases audience engagement and educational opportunities through immersion in history and objects.

The comprehensive application of SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) and PESTEL analysis (Political, Economic, Social, Technological, Environmental and Legal) identifies key internal and external influencing factors, assesses potential opportunities and risks, and forms a comprehensive picture of the project's operating environment (Mitton, 2024). In the integrated SWOT and PESTLE approach in the study by Vardopoulos *et al.* (2021), the author demonstrates that socio-cultural factors can be decisive in assessing the success of cultural projects, especially when it comes to local communities. For example, when opening a cultural centre in a small town, political support proved to be as important as funding. The Theory of Change methodology provides structured planning of the logic of change, identification of expected results and ways to achieve them, which is particularly important for assessing the social impact of cultural initiatives. This approach is widely used by the UN to model the expected results of cultural programmes, clearly defining the logic of change and the stages of implementation (UNDG, 2018).

An additional strategic advantage for project management is provided by the use of the Balanced Scorecard, a system that allows the formation of balanced key performance indicators (KPIs) in the areas of finance, customer experience, internal processes and staff development, which in turn contributes to the comprehensive monitoring of the activities of cultural institutions (Hayes, 2025) One example is the Boston Lyric Opera, where an adapted version of the Balanced Scorecard was introduced in 2001, taking into account the specifics of a cultural organisation. Instead of the traditional "Customer Perspective", metrics for subscriber engagement, sponsor support, and interaction with the cultural community appeared (Weinstein & Bukovinsky, 2020). The results of a critical analysis of cultural project management tools, with a view to their effective use in accordance with the types of cultural initiatives, are systematised in Table 5.

Table 5. Critical analysis of management tools and their relevance to cultural projects

Tool	Most suitable for type of initiative	Relevance and examples	Limitations for cultural projects
SWOT and PESTLE analyses	Short-term projects	Permits assessment of internal and external factors for rapid initiation of initiatives (parade exhibitions, pop-up events). Example: analysis of external cultural attitudes prior to the launch of a festival. PESTLE clearly describes the socio-cultural context	May be formal, requires in-depth cultural analysis
Benchmarking (VR)	Infrastructure projects	Useful for implementing technological solutions (VR tours in museums). Relevance depends on resources for VR.	Relevance depends on technological and financial capabilities

Table 5. Continued

Tool	Most suitable for type of initiative	Relevance and examples	Limitations for cultural projects
Theory of Change	Infrastructure projects	Enables logical structuring of changes and expected results in cultural centres and exhibitions. Requires initial data, but provides a clear model of impact.	Requires sound source data, may be difficult to use
Balanced Scorecard	Sustainable development / stock projects	Enables the integration KPIs into the sphere of culture, audience, and communications. Example: Scorecard for D&I in a museum – KPIs for diversity and inclusion. Relevant for long-term programmes with clear metrics	Requires adaptation to cultural specifics, otherwise remains abstract

Source: developed by the authors based on research by UNDG (2018), I. Vardopoulos *et al.* (2021), X. Chen (2024), A. Hayes (2025)

The development of managerial competencies and cultural intelligence is important for managers who strive to successfully manage cultural projects. At the organisational management level, it is advisable to implement measures aimed at developing the professional competence and intercultural awareness of managers. One effective tool is mentoring programmes, which provide guidance from experienced professionals and facilitate the transfer of practical knowledge to newcomers, forming the basis for continuous professional growth. This is discussed in a study (Kiitsak-Prikk *et al.*, 2024), where the authors describe a "pilot" in arts MBA programmes: mentoring, peer-to-peer and creative workshops, and conclude that this approach has improved the knowledge, skills and intercultural sensitivity of future cultural managers. Mentoring programmes that combine a cultural aspect, such as partnerships between educational institutions in cultural management, demonstrate that such programmes are supported by Erasmus+ (REMAM, Reinventing Mentoring in Arts Management) and help transfer experience to future leaders of the CCS – the cultural and creative sector (Pintor & Premazzi, 2024).

The development of social skills for effective management should begin in the educational sphere. When training future management specialists, in particular in socio-cultural activities, it is important to involve students and young professionals in the implementation of real cultural projects, thanks to which they gain direct experience in project management and form professional networks and connections. In a study (Gkogkidis & Dacre, 2021), the results are also integrated into the field of culture, proving that co-creative practical classes increase student engagement, promote learning, and develop creativity and communication. A publication (Caetano *et al.*, 2020) demonstrates that student participation in practical projects fosters shared leadership, empathy, dialogue and intercultural skills. Conducting training on intercultural sensitivity allows managers to better understand the specifics of interacting with representatives of different cultures and prevent communication barriers in an intercultural environment. The implementation of these recommendations in the management of organisations involved in the implementation of art initiatives will contribute to increasing the effectiveness of management decisions and the success of cultural projects.

CONCLUSIONS

The cultural sector is playing an increasingly important role not only in shaping identity and social well-being, but also in the global economy, accounting for over 6% of global employment and 3.1% of GDP. At the same time, the growing share of creative services exports indicates the sector's active economic dynamics, although there are structural imbalances between cultural and technological areas. The economic efficiency of cultural initiatives is directly related to the level of managerial competence of managers. Three interrelated blocks of competencies have the greatest impact on project performance: technical, contextual and behavioural. A high level of proficiency in these competencies ensures cost reduction, increased implementation accuracy, quality of interaction with stakeholders, effective leadership and team cohesion.

Soft skills, in particular emotional intelligence, adaptability, critical thinking, and strategic communication, are important for a successful career in creative management. Intercultural sensitivity and cultural intelligence (CQ) are particularly valuable, as they contribute to the successful implementation of projects in a multicultural environment, reduce the risk of conflict, and promote effective management decision-making. A high level of CQ in managers significantly improves the results of their socially oriented management functions – communication, motivation and conflict prevention. CQ promotes the growth of interdependence of tasks in teams, adaptation to new challenges, coordination of actions and, as a result, improves the financial and social indicators of implemented projects. SWOT, PESTLE, Balanced Scorecard, Theory of Change and Benchmarking are effective tools for planning, monitoring and evaluating cultural projects. They allow for both economic and socio-cultural aspects to be taken into account, ensuring comprehensive management and measurement of results. These approaches have proven to be most effective in long-term initiatives and in complex social contexts.

To improve the professional effectiveness of cultural managers, it is advisable to introduce mentoring programmes, practical training, intercultural sensitivity training and the creation of horizontal management structures. Such approaches contribute to increased team engagement, the development of empathy, the formation of intercultural skills and the strengthening of the institutional capacity of cultural organisations. The development of managerial

competencies and cultural intelligence is not only a requirement of the times, but also a key condition for ensuring sustainable success in the field of cultural management. A comprehensive combination of professional knowledge, social skills and strategic tools allows for the creation of effective, sustainable and socially significant cultural projects that are capable of adapting to global challenges. Modern cultural management requires a high level of interdisciplinary competencies, strategic thinking and cultural adaptability. These factors determine the success of cultural projects in a global environment. The analysis also revealed a number of aspects that require further scientific consideration: conducting longitudinal studies to determine how the influence of managerial competencies on the effectiveness of cultural initiatives changes over time, especially in unstable political or economic conditions; unification of methods for measuring the social skills and cultural intelligence of managers, which will create a standardised basis for comparative analysis between different regions, sectors and types of cultural projects.

A promising area for further research is to specify the role of digital technologies (VR, AI, big data) in the development of intercultural skills and the adaptation of management strategies in virtual and hybrid formats of project interaction; It makes sense to expand the empirical base through cross-country analysis of management practices in the cultural sector – in particular, to compare approaches in countries with different cultural densities, political systems, and models of cultural funding. It is necessary to study in greater depth the impact of mentoring programmes, peer learning and the practical involvement of students at different levels in projects on the formation of key competencies of future cultural managers; it is also promising to study how a manager's CQ influences the implementation of cultural inclusion policies in institutions, particularly in museums, theatres and festivals, through metrics of engagement, satisfaction and audience reach.

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Богдан Довгий

Магістр
Черкаський національний університет імені Богдана Хмельницького
18031, бульв. Шевченка, 81, м. Черкаси, Україна
https://orcid.org/0009-0003-0789-1651

Наталія Зачосова

Доктор економічних наук, професор
Черкаський національний університет імені Богдана Хмельницького
18031, бульв. Шевченка, 81, м. Черкаси, Україна
https://orcid.org/0000-0001-8469-3681

Економічна ефективність управлінських рішень у реалізації культурних проєктів: компетенції і soft skills менеджера як ключові фактори

Анотація. Культурний сектор демонструє зростаючий внесок у світову економіку, проте залишається вразливим до кризових явищ і структурних ризиків. В умовах нестабільності зростає потреба в ефективному управлінні культурними проєктами, що актуалізує дослідження впливу управлінських та соціальних компетенцій на досягнення сталих економічних результатів. Метою дослідження був аналіз зв'язку між управлінськими компетенціями менеджерів, їх соціальними навиками (soft skills) та економічною ефективністю реалізації культурних проєктів. Методи дослідження: критичний огляд та контент-аналіз фахової літератури, зокрема матеріалів, опублікованих у 2020-2025 роках, логіко-аналітичний та порівняльно-синтетичний підходи. Виявлено, що управлінські компетенції культурних менеджерів мають визначальний вплив на ефективність реалізації культурних ініціатив. Підтверджено провідну роль soft skills, таких як емоційний інтелект, адаптивність і стратегічна комунікація, у мультикультурному середовищі. Встановлено, що високий рівень культурного інтелекту (CQ) сприяє зниженню конфліктності, покращенню комунікації в командах і підвищенню результативності проєктів. Проаналізовано ефективність застосування стратегічних інструментів управління (SWOT, PESTLE, Balanced Scorecard) для довгострокових культурних проєктах. Запропоновані інструменти управління, які дають можливість впроваджувати системний підхід до планування та оцінювання культурних ініціатив, що дає можливості для посилення інституційної спроможності організацій сфери культури та підвищення їх соціального й економічного впливу на економічний розвиток країни. Практична цінність дослідження полягає у визначенні конкретних управлінських компетенцій, які сприяють успішній реалізації культурних проєктів у складних соціокультурних умовах. Отримані результати можуть бути використані для розробки програм підвищення кваліфікації культурних менеджерів, зокрема, у сфері міжкультурної комунікації та лідерства

Ключові слова: управлінські компетенції; культурний інтелект; аналітичні інструменти; креативні індустрії; стратегічне мислення; міжкультурна чутливість; оцінка ефективності

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Halyna Melnyk
PhD in Economics, Associate Professor
Yuriy Fedkovych Chernivtsi National University
58012, 2 Kotsiubynskoho Str., Chernivtsi, Ukraine
https://orcid.org/0000-0001-5386-5903

Viktor Rovinsky*
PhD in Technical Sciences, Associate Professor
Vasyl Stefanyk Carpathian National University
76018, 57 Shevchenka Str., Ivano-Frankivsk, Ukraine
https://orcid.org/0000-0001-8454-8580

Vasyl Melnyk
PhD in Physics and Mathematics
Yuriy Fedkovych Chernivtsi National University
58012, 2 Kotsiubynskoho Str., Chernivtsi, Ukraine
https://orcid.org/0009-0005-2880-6449

Organisational problems as the root cause of systemic failures of IT projects

Abstract. The relevance of the study was determined by the chronic failures of government information technology projects, which are accompanied by budget overruns and missed deadlines, representing a global problem. These failures are rarely purely technical; they are symptoms of deep organisational pathologies. Traditional frameworks for project management and business analysis focus on rational processes, often ignoring the irrational forces that deform them. The purpose of this study was to analyse and systematise the impact of four key organisational pathologies – dysfunctional formalisation, rent-seeking behaviour, favouritism, and autocratic management style – on the fundamental processes of project management and business analysis in government IT projects. The primary research method was thematic analysis using the 6-phase model. The empirical base consisted of M = 18 publicly available documents from 2019-2025, selected according to the principles of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Sources included audit reports from supreme audit institutions official reports from law enforcement agencies, which underwent triangulation. Data analysis revealed three main mechanisms of deformation in project management and business analysis processes: (1) formalisation and ritualisation, which transforms risk management and metrics into mere formality; (2) inversion and sabotage (through rent-seeking behaviour), which turns project management and business analysis into tools for falsifying procurements and embezzling funds; (3) the dominant autocratic management style, which replaces systematic processes with the leader's will. A conceptual matrix has been formed that details this impact. The work offers a set of criteria for early identification of pathologies and practical recommendations for countermeasures (in particular, using open data and strengthening rational standardisation). The practical significance of the proposed matrix lies in its function as a diagnostic tool for project managers, business analysts, and auditors

Keywords: project management; business analysis; organisational pathology; procurement corruption; bureaucracy

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*Corresponding author

INTRODUCTION

The persistent failure of government information technology (IT) projects has become a significant concern for public administration worldwide. These failures have been characterised by chronic budget overruns, catastrophic schedule delays, and the inability to achieve declared goals. Such outcomes have rarely resulted from technical shortcomings alone; instead, they have reflected entrenched organisational dysfunctions that undermine the effectiveness of project management (PM) and business analysis (BA). The urgency of addressing these organisational factors has been underscored by recent public audits and academic studies, which highlighted the critical need for reform in public sector IT governance.

Recent researches have increasingly focused on the organisational roots of IT project failures. J. Schmidt (2023) analysed risk mitigation mechanisms, finding that bureaucratic inertia and lack of stakeholder engagement are recurrent barriers. In the Ukrainian context, the Accounting Chamber (2024) documented similar patterns, noting the absence of standardised methodologies and the prevalence of formalism in project oversight. I.J. Borges do Nascimento *et al.* (2023) and M. Bader *et al.* (2024) further explored the impact of process rigidity and insufficient user involvement on project outcomes. Previous researches, conducted by A.K. Albarzanji & A.Y. Alsabawy (2021) and K. Balka *et al.* (2022) have identified multiple causes for the failure of IT and e-government projects, including technical, organisational, and user-related factors. These findings have been also echoed in the work of M. Chen *et al.* (2025), who identified integration challenges and unrealistic expectations as key contributors to project failure.

Ukrainian scholars have also contributed to this discourse: the Ministry of Digital Transformation's audits (The Accounting Chamber, 2024) and regulatory reforms (Resolution of the Cabinet of Ministers of Ukraine No. 893, 2025) have provided empirical evidence of both progress and persistent challenges in the national context. As noted by M. Halushchak *et al.* (2023), Ukraine has made considerable progress in digital government services, climbing significantly in global e-government rankings; however, challenges in citizen engagement and participation remain. Effective risk management in the public sector was recognised as a key component in preventing project failure, particularly where management dysfunction and lack of transparency are present (Butenko, 2024). Despite these advances, the literature has revealed a gap in the systematic analysis of how specific organisational pathologies – such as dysfunctional formalisation, rent-seeking behaviour, favouritism, and autocratic management – distort the core processes of project management and business analysis in government IT projects. In the context of IT project implementation in Ukraine, researchers emphasised the need for comprehensive project governance, supported by modern tools like Enterprise Resource Planning (ERP) systems, Artificial intelligence (AI) integration, and proactive scenario planning (Koval *et al.*, 2023).

Building on the analysis of these studies, this research aimed to systematise the impact of key organisational pathologies on project management and business analysis within government IT projects. The study addressed the following questions: which organisational pathologies are most frequently identified in recent audits and investigations and how do these pathologies specifically deform or neutralise standard project management and business analysis processes. By integrating models of IT project failure, organisational pathology theory, and critiques of standard frameworks, this work sought to develop a diagnostic matrix for early identification and mitigation of these dysfunctions.

MATERIALS AND METHODS

The study employed a qualitative design; the primary method was thematic analysis based on the approach of N. Carter *et al.* (2014) and V. Braun & V. Clarke (2021). The empirical base consisted exclusively of publicly available documents with several inclusion criteria. By type, it incorporated official reports prepared by supreme audit institutions, including Audit Scotland (2017), the Accounting Chamber (2024), UK National Audit Office (2024; 2025), as well as documents issued by the US Government Accountability Office (2025). It also covered official reports from verified media reporters, such as I. Sitnikova (2025). The temporal scope of the study covered publications released between 2019 and 2025. Thematically, the selected documents addressed the management of government IT projects, digital transformation processes, IT-related public procurement, and instances of project failure in these areas. Document selection (based on PRISMA principles) included the following steps:

- Identification: N = 45 documents were identified through searches in databases.
- Screening: N = 29 documents were excluded (duplicates, lack of focus on PM/BA).
- Eligibility: N = 16 documents were assessed for full-text eligibility.
- Inclusion: M = 18 documents were selected for detailed coding.

Coding and triangulation were carried out by two independent analysts using the 6-phase model. In the first phase (coding), the text of the documents was analysed to identify semantic descriptions of problems (e.g., semantic code: "lack of quality assessment methodologies", "failure to report minimally required metrics", "delays in plan approval" etc.). In the second phase (theme generation), these codes were grouped into latent interpretive themes; for example, the code "lack of metrics" was grouped into the theme "Metrics Sabotage", which, in turn, fell under the pathology "Dysfunctional Formalisation". To mitigate the bias inherent in non-peer-reviewed media sources, their factual data (company names, amounts, dates) were cross-verified and triangulated with official data from audit bodies and court registries, where possible. Unverified data were

excluded from consideration. Table 1 presents the sources and cases selected for detailed coding, including document type, date, originating organisation, and the main coded themes identified in each.

Table 1. Examples of data sources

Source/Case	Document type	Date	Organisation	Coded themes
GAO "Legacy Systems"	Audit Report	2025	GAO (USA)	"Dysfunctional formalisation, PM paralysis"
GAO "DoD IT Projects"	Audit Report	2025	GAO (USA)	"Dysfunctional formalisation, lack of metrics"
NAO "Digital Transformation"	Audit Report	2023-2025	NAO (UK)	"Integration failure, "Red" rating"
"Derzhspetszviazok"	NABU Report / Media Report	2025	NABU (Ukraine)	"Rent-seeking, cronyism, PM/BA inversion"
Mintsyfra Reform	Regulatory Act Analysis	2025	CMU (Ukraine)	Rational standardisation (as a solution)
Accounting Chamber Audit (Accounting Chamber of Ukraine, 2024)	Audit Report	2024	Accounting Chamber (Ukraine)	"Dysfunctional formalisation, lack of methodologies"

Note: GAO – Government Accountability Office; NAO – National Audit Office; NABU – National Anti-Corruption Bureau of Ukraine; CMU – Cabinet of Ministers of Ukraine

Source: developed by the authors based on UK National Audit Office (2024), Resolution of the Cabinet of Ministers of Ukraine No. 893 (2025), US Government Accountability Office (2025), I. Sitnikova (2025)

This table summarises the empirical material underpinning the thematic analysis and the development of the diagnostic matrix. This approach relied on triangulation techniques to ensure validity and consistency of identified themes, as recommended in prior methodological studies. The emphasis on methodological transparency and structured use of heterogeneous data sources is consistent with approaches applied in contemporary Ukrainian economic research (Khudoliy, 2025). By structuring heterogeneous sources across institutional contexts, the table enhances transparency in data selection and supports the traceability of analytical decisions linking empirical evidence to higher-level thematic interpretations.

RESULTS AND DISCUSSION

Systemic governance failures in public sector IT projects

The results of the analysis revealed that systemic issues in public sector IT projects – including inadequate use of metrics, poor requirements elicitation, weak stakeholder engagement, and dysfunctional formalisation – are widespread across multiple national contexts (US, UK, and Ukraine). These patterns were consistently identified in the reviewed audit reports and triangulated sources. Despite incremental improvements in audit and oversight capabilities, the absence of robust methodologies and objective performance indicators has enabled project failures to remain concealed, allowing misallocation of resources and reduced accountability. These findings highlight common vulnerabilities in project governance and reinforce the need for rational standardisation, strong project management structures, and early stakeholder alignment to mitigate the effects of organisational dysfunction.

The experience of the US federal government is illustrative due to the transparency of its audit bodies. The US government invests over $100 billion annually in IT. However, these investments have often failed or have experienced cost overruns and schedule delays. As a result of this systemic issue, federal IT investment management has been on the GAO's "High Risk List" since 2015. As of January 2025, 463 of more than 1,800 GAO recommendations issued since 2010 to improve IT management remained unimplemented. A GAO analysis of the Department of Defense's (DoD) IT programs revealed systemic failures; planned expenditures were projected to reach $10.9 billion by fiscal year 2025 (US Government Accountability Office, 2025).

The 2025 report on 24 large IT programs demonstrated classic symptoms of project management failure; specifically, weak and inconsistent performance tracking was noted in metrics management. Out of 19 programs with operational investments, five failed to provide reports on minimally required performance metrics, such as customer satisfaction or financial outcomes. Only one program met all performance goals, while another met none. The data presented in the Table 2 summarise key challenges identified in major public sector IT programmes, as evidenced by audit reports from the US Government Accountability Office (2025) and the UK National Audit Office (2025).

Table 2. Summary of key challenges in major public sector IT programmes

Factor	Observed issue	Implications	Best practice reference
Budget and schedule management	Half of analysed programmes experienced cost overruns ($6.1M to $815.5M). Seven programmes had schedule delays up to 4 years.	Significant financial inefficiency; extended delivery timelines.	Scope management, robust planning, and cost control.
Stakeholder engagement	Insufficient involvement of end-users and clients in project decisions.	Requirements not fully understood, leading to misaligned solutions and poor user satisfaction.	Proactive stakeholder engagement, effective requirements elicitation (PMBOK®, BABOK®).
Risk/cybersecurity management	Two of four largest DoD IT programmes lacked approved cybersecurity strategies; none had plans for "zero trust" architecture by 2027.	Increased vulnerability and non-compliance with mandates.	Comprehensive risk response planning, cybersecurity best practices (PMI risk response principle).
Complexity of digital transformation	Digital projects in the UK faced integration challenges with legacy systems and unrealistic expectations.	Projects rated "critical condition"; common need for "resetting" projects.	Integration with legacy environments, realistic goal setting, strong project sponsorship (NAO reports).

Note: PMI – Project Management Institute; BABOK – Business Analysis Body of Knowledge
Source: developed by the authors based on US Government Accountability Office (2025), UK National Audit Office (2025), PMBOK Guide (n.d.)

Under the category of budget and schedule management, the table draws from findings that half of the analysed US federal IT programmes experienced significant cost overruns, with additional expenditure ranging from $6.1 million to $815.5 million. Furthermore, seven programmes faced delays, with timelines extended by up to 4 years. These issues reflect substantial financial inefficiency and prolonged delivery of outcomes, underscoring the importance of robust scope management and planning, as recommended by project management best practices (PMBOK Guide, n.d.).

For stakeholder engagement, the table highlights the insufficient involvement of end-users and clients in project decision-making processes, a pattern that is consistent with prior findings in the literature (Anthopoulos *et al.*, 2016). This lack of engagement meant that requirements were often defined without a comprehensive understanding of actual business needs, resulting in misaligned solutions. The table references established professional standards and guides, such as the PMBOK® Guide and BABOK®, which emphasise proactive stakeholder engagement and effective requirements elicitation as essential for project success and customer satisfaction.

In the area of risk and cybersecurity management, the Table 2 reflects audit findings that two of the four largest US Department of Defense IT programmes lacked approved cybersecurity strategies, and none had plans to implement the mandated "zero trust" architecture by 2027. These gaps highlight vulnerabilities in risk planning and the need to adhere to recognised principles in cybersecurity and risk response. Finally, the Table 2 incorporates data from the UK National Audit Office, which recorded similar patterns of difficulty in digital transformation projects. Many initiatives within the Government's Major Projects Portfolio were found to be in "critical condition", often due to the complexities of integrating new digital solutions with legacy systems and unrealistic expectations regarding project outcomes. The frequent need to "reset" or revise these programmes is also reflected as a recurring theme in the table.

Audit insights and overcoming dysfunctional formalisation in Ukrainian IT project management

Ukraine's audit bodies, although still developing specialised IT competencies, are already recording the same fundamental problems. An audit by the Accounting Chamber (2024) of the Ministry of Digital Transformation and the "DIIA" enterprise for 2022-2024 revealed significant achievements, including an economic effect of ₴59.7 billion and an anti-corruption effect of ₴6.5 billion. At the same time, the audit pointed to a fundamental problem identical to that identified by the GAO in the US: "the lack of approved methodologies for assessing service quality does not allow for proper monitoring of progress achieved and timely response to challenges".

The recognition of systemic risks in government IT projects has prompted both the State Audit Service of Ukraine and the Accounting Chamber to strengthen their IT audit capabilities. In particular, the State Audit Service has introduced a formal procedure for conducting state financial audits of investment projects (formerly referred to as "IT audits"), as established by Resolution of the Cabinet of Ministers of Ukraine No. 740 (2018). At the same time, the Accounting Chamber (2024) has initiated institutional capacity-building by recruiting specialised staff, including positions such as Head of the IT Processes and Systems Audit Sector, with the aim of developing appropriate audit methodologies.

A comparative analysis of these findings and corresponding evidence from the US Government Accountability Office (2025) reports revealed an identical, recurring symptom: the systemic absence or inadequacy of metrics

for assessing the effectiveness and quality of IT projects. In project management, metrics are the foundation of the "Monitoring and Control" phase. Without objective data, the project manager and stakeholders cannot adequately assess the project's status, its alignment with goals, or end-user satisfaction.

This phenomenon should be viewed as a functionally protective mechanism for the system. In a formalised organisation, where project failure can mean the end of a career, the absence of clear metrics becomes a form of insurance. If no objective, approved data record low user satisfaction or lack of progress, the project cannot be officially declared a failure (UK National Audit Office, 2024). This allows the project to exist in a state of simulated usefulness: it continues to consume budgets, simulate activity, and avoid accountability or radical decisions, such as a reset.

The management pathology of "dysfunctional formalisation" is often mistakenly reduced solely to its negative manifestation – red tape. In reality, formalised management is the fundamental operating system of any large organisation. Its impact is twofold: it can act as a rational tool for organisation or as an irrational brake, leading to the dominance of form over substance. In its positive (Weberian, rational-legal) sense, rational standardisation is a system of rational organisation. If standardisation remains within defined limits, it "will help increase the level of organisational management, promote accuracy, and speed up managerial work". It ensures a clear division of functions, a management hierarchy, and the presence of rules and standards.

However, it is important to distinguish between unnecessary rules and directives that create additional administrative burdens and complicate production processes. Often, such directives and instructions are issued as a formal response to emerging situations, aimed primarily at demonstrating managerial reaction rather than resolving underlying problems, as they are not accompanied by adequate resources for implementation. As a result, staff may become engaged in symbolic or superficial implementation, lacking the capacity to address the problem even at a theoretical level. Furthermore, management personnel organisationally distant from production processes and therefore fail to understand their actual operational requirements. This tendency is particularly evident when managers lack relevant education (e.g., individuals trained in psychology or history overseeing complex IT or robotics projects) and consequently avoid engagement with technical details.

However, even useful regulations inevitably involve certain costs, as organisations need time to adapt to new rules. Problems arise when formalisation exceeds rational limits. This phenomenon, commonly referred to as dysfunctional formalisation (or bureaucratism), reflects a situation in which formal procedures begin to dominate over the actual content of management. As a result, time is wasted, decision-making slows down, and opportunities for informal or corrupt practices may emerge, as managerial activity becomes focused on formal compliance rather than real problem-solving. In such conditions, substantive work is pushed to the background, and organisational effectiveness declines.

A clear example of addressing dysfunctional formalisation – rather than formalisation itself – in favour of rational standardisation is the reform of approaches to developing state IT systems in Ukraine, introduced by Resolution of the Cabinet of Ministers of Ukraine No. 893 (2025). Under the previous system, project initiation required five to seven separate documents, lengthy approval procedures, and compliance with outdated Soviet-era norms. The new resolution replaced the old system: instead of 5-7 documents, only technical requirements and a technical specification are required. It also replaced obsolete standards with international ones, notably ISO and IEEE, introduced more flexible modern information security systems instead of cumbersome comprehensive security frameworks (KSZI), and allowed the use of cloud technologies and open-source solutions. As a result, the expected development time for state IT systems was reduced from months to weeks.

International perspectives:
Lessons from the UK and Ukraine

Analysis shows that the vacuum created by the absence of rational standardisation is extremely dangerous. The absence of standards leads to chaotic requirements generation. Research on formalised management also confirms that insufficient use of standardisation tools leads to "disorganisation" and "reduced responsibility". This kind of organisational analysis benefits from robust qualitative research practices, including attention to intercoder reliability for ensuring consistency in thematic findings (O'Connor & Joffe, 2020). The vacuum is instantly filled either by dysfunctional formalisation or by rent-seeking behaviour, a phenomenon extensively analysed in the context of modern institutional inefficiencies (Krueger, 1974). Dysfunctional formalisation and organisational inertia directly disrupt the core of production processes. They turn tools intended to achieve goals (risk management, quality) into formal, ritualistic practices devoid of real content. Modern PM requires a proactive approach to risk management, for example, through RAID analysis (Risks, Assumptions, Issues, Dependencies), to "predict and prevent" problems. However, in a deeply formalised system, a PM can identify a risk (e.g., "delays in obtaining permits") but cannot "manage" the administrative risk, as they lack the authority.

In an environment dominated by formalism, publicly raising fundamental risks (e.g., "this "legacy" system is vulnerable") can be perceived as disloyalty, forcing the PM to ignore real risks. The interaction between dysfunctional formalisation, organisational inertia, and rent-seeking behaviour creates a self-reinforcing loop that undermines project management and business analysis processes. These dynamics are illustrated in Figure 1, which maps how each pathology contributes to inflated documentation, delays, and distorted procurement mechanisms, ultimately leading to systemic project failure.

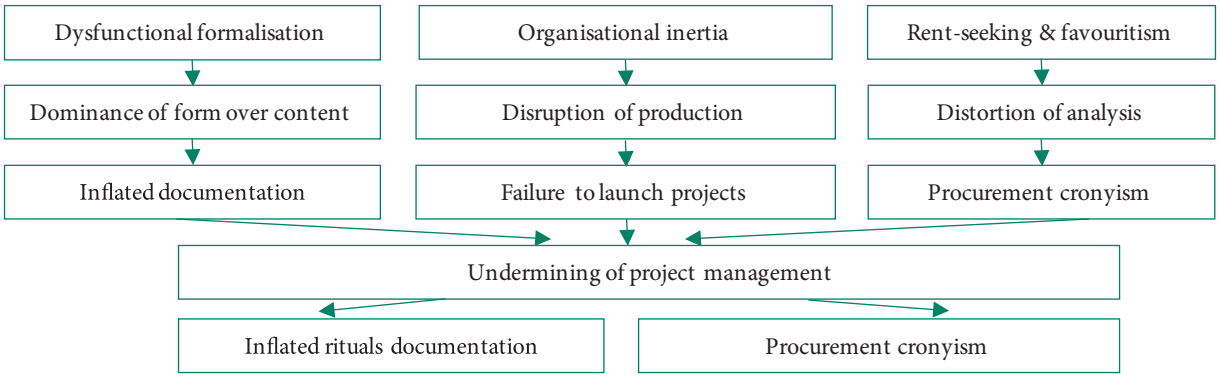

Figure 1. Systemic management pathologies in public sector projects
Source: developed by the authors

The most destructive impact of organisational inertia on PM is demonstrated by GAO reports on the modernisation of legacy IT systems in the US government. According to GAO assessments, six years ago ten legacy systems were identified as the most critical, yet by 2025 seven of them had still not been modernised. These systems were between 23 and 59 years old, relied on outdated programming languages such as COBOL and Assembler, operated on unsupported hardware, and, most critically, contained known cybersecurity vulnerabilities (US Government Accountability Office, 2025).

The failure to modernise these systems is a fundamental failure of project management at the initiation phase, caused by organisational inertia. Such inertia echoes broader structural issues in government IT project management, where outdated processes and risk-averse culture hinder innovation from the start (Yaraghi, 2015). This observation is consistent with long-standing case-based analyses, in which C. Sauer (1993) demonstrated that deep-rooted organisational failures are at the heart of many unsuccessful information systems initiatives. From this perspective, the situation reflects what organisational failure diagnosis models describe as systemic breakdowns occurring at early stages of planning and structural design, as conceptualised by A.M. Goulielmos (2005). Similar conclusions are echoed in consulting evidence, with PricewaterhouseCoopers (2017) identifying weak project foundations and unclear accountability as key root causes of early-stage failure in public sector projects.

Ultimately, GAO pointed directly to the cause: agencies failed to fully document their modernisation plans (US Government Accountability Office, 2025). Without these plans, initiatives have an "increased likelihood of cost overruns, schedule delays, and overall project failure", which aligns with empirical findings on the heavy-tailed, power-law distribution of IT project cost overruns identified by H. Mulder (1994) and later confirmed by B. Flyvbjerg *et al.* (2022). Such outcomes are often rooted in various forms of uncertainty inherent in software development projects, including scope ambiguity, stakeholder misalignment, and shifting requirements (Zhang *et al.*, 2025). This means that the administrative complexity of launching a new modernisation project (obtaining countless approvals) is so high that it is easier for agencies to continue spending hundreds of millions of dollars supporting old, vulnerable systems than to initiate their replacement (US Government Accountability Office, 2025). This represents a typical example of how unfavourable enterprise environmental factors can obstruct decision-making and progress in public sector projects, as discussed by M. Romanelli (2022). Moreover, R. Syed *et al.* (2023) noted that Such systemic stagnation is often intensified in developing countries, where digital transformation efforts face institutional, regulatory, and cultural resistance.

In formalised systems, the tracking of actual performance metrics is frequently undermined. Audit reports by the US Government Accountability Office (2025) and the Accounting Chamber (2024) of Ukraine document systematic deficiencies in performance measurement practices. The PM is forced to report on formal metrics ("10 meetings held") rather than substantive ones ("user satisfaction level"). Similar issues were observed in recent evaluations of digital transformation initiatives, where focus on documentation and procedure overshadowed meaningful performance outcomes (Szedmák *et al.*, 2025). A product is considered "quality" not when it meets user needs, but when it has collected signatures from all responsible parties. This represents the "dominance of form over content", a hallmark of organisational pathology as described in the Sustainability Directory (2025), in which procedures and rituals overshadow actual performance and purpose. In the context of public sector IT projects, M. Lerner (2020) argued that such systemic conditions frequently result in chronic failure when formality overtakes functionality.

In a normal IT project, BA is a process of discovering and validating real business needs. In organisations afflicted by management pathologies, the BA function degrades, becoming either a ritualistic filling out of documents or a tool for rent-seeking sabotage. In a system dominated by dysfunctional formalisation, the business analyst's focus shifts. This dysfunction reflects challenges frequently observed in developing countries, where poor governance

and institutional weaknesses undermine e-government initiatives (Nyansiro *et al*., 2021). The main stakeholder for the BA is not the end-user, but the approval procedure. Requirements are gathered and analysed not so the future product solves a real problem, but so the requirements document (Technical Specification) successfully passes all necessary committees. This leads to the creation of bloated, unrealistic technical specifications. Business analysis transforms into "paperwork". When rent-seeking interest is added to dysfunctional formalisation, a complete inversion of the very essence of business analysis occurs.

The goal changes from finding the best solution to justifying a predetermined (rent-seeking) solution. If organisational inertia leads to the passive failure of projects (paralysis, delays), the synergy of rent-seeking behaviour and favouritism leads to active sabotage. The project becomes a special operation to siphon funds, a pattern often linked to low procurement maturity and systemic vulnerabilities in public sector processes (Hua, 2022), reflecting how high transaction costs and limited administrative capacity can directly lead to procurement failure and project cancellations (Casady *et al*., 2023). Dysfunctional formalisation is a necessary prerequisite for rent-seeking behaviour. As UNODC (n.d.) researchers note, "the presence of regulatory acts and permits grants a certain monopoly power to officials". Officials and managers may intentionally introduce new, complex regulations to be able to demand illicit benefits (bribes) for their passage, a practice documented by A. Vasilev (2013) in analyses of administrative corruption. This mechanism reflects the classical theory of rent-seeking originally articulated by G. Tullock (1967), where regulatory control is leveraged for personal gain rather than public benefit. When rent-seeking opportunities are combined with favouritism, the system becomes closed. In such cases, the appointment of relatives/friends and "insiders" occurs largely regardless of their qualifications. Appointing an unqualified relative or associate to the role of PM is a guarantee of failure. Studies confirm a strong negative correlation between the presence of family ties and the efficiency of large institutions. In procurement, cronyism manifests in the creation of "VIP lanes" for politically connected suppliers, a mechanism that has been empirically linked to favouritism and distortions in auction outcomes (Dastidar & Jain, 2023).

The NABU investigation into the activities of the Derzhspetszviazok (State Service of Special Communications and Information Protection of Ukraine) illustrates the full synergy of all three pathologies. The investigation uncovered a large-scale scheme involving senior officials, resulting in the embezzlement of over ₴90 million during the procurement of unmanned aerial vehicles (UAVs) for the Defence Forces. A department head planned to embezzle part of the ₴30 billion allocated by "supplying drones at inflated prices". Investigation, conducted by I. Sitnikova (2025), revealed that procurement decisions favoured preselected companies linked to the brother of an entrepreneur with close business relations to the official involved. The crime was committed using a formal tender procedure. A clear inversion of key management and analytical processes is observed: the tender mechanism was organised to create an illusion of competition by involving controlled firms, while the business analysis and requirements definition process was subordinated to rent-seeking interests. As a result, specific models were purchased (DJI Mavic 3 and Autel Evo Max 4T), the choice of which, according to analysis, was likely based not on the end-user's operational needs, but on the possibility of suppliers earning super-profits; the purchases were made at prices 70-90% above market rates. Although the project was formally considered "completed", from the perspective of effective resource use, it must be seen as a failure, causing over ₴90 million in losses to the state.

Similar long-term failures of large government IT systems have been well documented. R.N. Charette (2019) showed that such projects often persist despite being technically outdated or poorly aligned with user needs. The autocratic management style, or authoritarian leadership, is considered a separate management pathology. It differs from dysfunctional formalisation and rent-seeking behaviour in that it does not slow or sabotage the project through bureaucracy or selfish interests, but rather forces it, systematically ignoring or destroying established processes of project management and business analysis. In the political dimension, this phenomenon is described as the dominance of the executive branch relying on a police-bureaucratic apparatus and a "cult of the leader"; in the corporate context, autocracy means the concentration of complete control over decision-making in the hands of one person, who disregards the team's input and demands unquestioning obedience.

Historical and modern illustrations of this leadership type (e.g., Jobs, Musk) are cited as examples, yet its effectiveness proves paradoxical: in narrow, specialised tasks or crisis scenarios (especially in defence structures), an autocrat can provide rapid, decisive solutions, minimising delays. However, in the long term and in systems requiring teamwork and stable procedures, this style undermines organisational culture, leads to demoralisation, and increases staff turnover. Recent studies by J. Crusoe *et al*. (2024) describe this phenomenon as "digital transformation decoupling", where managerial inertia and wilful ignorance prevent meaningful structural change. In an autocratic management model, the business analysis process is effectively annihilated: requirements are formulated and imposed as a monologue from the sole leader, mechanisms for gathering and validating requirements with stakeholders are absent, and the role of the business analyst is reduced to that of a "scribe" documenting the leader's vision. Any attempt at validation or critical review of requirements is interpreted as a waste of time or a manifestation of disloyalty, fostering a "culture of fear". As a result, systemic project management (PMBOK, Agile, etc.) loses its efficacy: planning is dictated by the leader's will, the risk management (RAID) process is blocked, and the sole metric of success becomes the leader's subjective approval. Although this style sometimes allows "breaking through" administrative paralysis to achieve a

quick result, it simultaneously destroys rational standardisation and stable PM and BA processes, undermining the organisation's long-term effectiveness.

The analysis of open sources, audit conclusions, and investigations indicates that the four identified organisational pathologies create a toxic and unviable environment for IT projects. First, dysfunctional formalisation breeds inertia and administrative paralysis, focusing PM and BA work on procedures instead of target outcomes, causing delays and an inability to initiate or adapt projects (The Accounting Chamber of Ukraine, 2024; US Government Accountability Office, 2025). Second, rent-seeking behaviour, along with favouritism/cronyism, inverts the purpose of PM and BA processes, turning projects into tools for illicit enrichment. According to investigative reporting by I. Sitnikova (2025), business analysis is used to formulate artificial requirements, and project management to rig tenders in favour of connected suppliers. Finally, an autocratic management style annihilates systemic management practices, replacing them with the leader's will, which fosters a "culture of fear" and makes realistic planning impossible. In sum, these phenomena undermine rational standardisation and long-term effectiveness, as detailed in the synthesis matrix, shown in Table 3. As summarised in Table 3, the identified organisational pathologies manifest through recurring deformation mechanisms that jointly undermine PM and BA functionality, reinforcing the systemic nature of project failure discussed above. On this basis, practical recommendations aimed at increasing the resilience of PM and BA through the systematic application of open data, identification of problem indicators, and introduction of mechanisms to protect project integrity.

Table 3. Matrix of the impact of organisational pathologies on PM and BA

Pathology	Impact on PM	Impact on BA
Dysfunctional formalisation	Paralysis and ritualisation. • Paralysis of decision-making due to endless approval cycles. • Administrative paralysis at initiation (Case: "Legacy Systems". • Sabotage or ignorance of real performance metrics. • Risk management becomes a formality (inability to influence administrative risks).	Ritualisation of the process. • Focus shifts from the user to the approval committee. • Requirements are gathered for "correct" documentation, not to solve a business problem. • "Dominance of form over content".
Rent-seeking behaviour	Inversion and falsification. • PM Goal: Not "within budget", but "spending the budget" with maximum markup (70-90% in Derzhspetszviazok case). • Falsification of procurement processes: "distorted market research", "simulated competition".	Inversion and sabotage. • Inversion of the process: Requirements (choice of drone models) are dictated by corruption margins, not business needs (Derzhspetszviazok case).
Favouritism / cronyism	Degradation of competencies. • Appointment of unqualified PMs (relatives, "associates"). • Creation of "VIP lanes" for "insider" suppliers, ignoring procedures.	Ignorance or incompetence. • Appointment of incompetent individuals to the role of customer (product owner). • BA cannot obtain clear, logical requirements. • Requirements are based on personal connections.
Autocratic management style	Annihilation of processes. • Planning: Replaced by the leader's will; deadlines are unrealistic. • Risk Management: Impossible. Reporting risks = "disloyalty" ("culture of fear"). • Metrics: The only metric is the leader's subjective approval.	Annihilation of the process. • The leader is the sole source of requirements. • Validation of requirements with users is forbidden or ignored. • BA is reduced to the role of "scribe".

Source: developed by the authors based on US Government Accountability Office (2025), I. Sitnikova (2025)

Project management and business analysis specialists must master tools for analysing public data (including the Ukrainian Open Data Toolkit (Resolution of the Cabinet of Ministers of Ukraine No. 893, 2025) and use them for preliminary analysis of similar tenders before formulating requirements and for market price analysis during budgeting (to counter inflation, as in the Derzhspetszviazok case). It is advisable to formalise a set of indicators for typical problems: signs of dysfunctional formalisation (prioritising procedures over results, lengthy approvals, refusal of objective metrics), rent-seeking behaviour and favouritism (illogical requirements in the technical specification, "VIP lanes", involvement of connected suppliers), and autocratic practices (prohibition of direct contact with users, punitive reactions to risk reporting).

Defence strategies should combine several complementary elements. First, they should insist on rational standardisation by implementing international standards such as ISO and IEEE, as well as recognised methodologies including BABOK and PMBOK as a legal shield against corruption (Project Management Institute, 2021). Second, they should emphasise the economic justification of procedures by translating administrative delays into measurable monetary losses. Finally, defence strategies should promote the development of an internal corporate legal environment that supports whistle-blowers and provides secure

channels for reporting risks, as formalised in Ukraine's regulatory framework for state IT projects (Resolution of the Cabinet of Ministers of Ukraine No. 893, 2025). Taken together, these measures form a preventive framework for maintaining PM and BA functionality.

In response to the research questions, three principal deformation mechanisms were identified. The first one (1) is paralysis and ritualisation: formalism manifests as excessive proceduralism that substitutes real action with bureaucratic rituals. This undermines adaptive project planning, impedes stakeholder alignment, and delays project initiation. Such patterns reflect the anti-patterns warned against in PMBOK's principle of "Tailoring" – which emphasises adjusting project practices to context rather than rigidly applying processes.

The second principle (2) is inversion and sabotage: rent-seeking behaviours and cronyism invert the intended logic of project work. Business analysis becomes a tool to justify predetermined vendor preferences (e.g., through artificially inflated or misaligned requirements), while project management is reduced to a mechanism for procurement manipulation. These behaviours violate core BABOK principles such as requirements validation, solution assessment, and stakeholder collaboration.

The third principle (3) is annihilation of controls: under autocratic leadership models, critical decision-making processes become centralised and opaque. Business needs are replaced by executive monologues, while risk management and validation functions are suppressed, often creating a "culture of fear". This contradicts PMBOK's emphasis on "Stewardship" and "Team Empowerment" – which promote shared ownership and open communication as enablers of successful outcomes.

Addressing these organisational pathologies requires more than technical fixes. Based on these findings, it is recommended to embed risk-based thinking throughout project life cycles, ensuring alignment with the PMBOK® principle to "Optimise Risk Responses". Additionally, it is important to institutionalise stakeholder engagement and validation mechanisms, which is consistent with BABOK's requirement lifecycle and engagement standards. Finally, fostering a culture of accountability and transparency remains essential, in line with PMBOK's principles of "Value Delivery" and "Holistic Thinking". These corrective actions are not only grounded in empirical evidence but also reflect global best practices in public project governance.

CONCLUSIONS

This study demonstrated that four recurring organisational pathologies – dysfunctional formalisation, rent-seeking behaviour, favouritism/cronyism, and autocratic management – systematically distort core processes of PM and BA within government IT projects. These dysfunctions were identified through thematic analysis of authoritative public data sources, including audit reports by the GAO, NAO, the Accounting Chamber of Ukraine, and verified investigative media. Collectively, these mechanisms not only sabotage project delivery but also erode the foundations of institutional learning, long-term digital capability, and public trust. The result is a systemic failure of rational standardisation, where formal PM and BA frameworks exist in name only and are used selectively to legitimise dysfunctional practices.

As echoed in broader literature on digital government and project failure, enhancing organisational maturity, enforcing ethical standards, and aligning PM/BA practices with strategic goals are essential for restoring effectiveness in public sector IT initiatives. Ultimately, this research underscores that effective digital transformation depends not solely on technical capacity or funding – but on resolving entrenched organisational dysfunctions that corrupt the very systems designed to deliver.

Looking forward, further research should explore the effectiveness of specific interventions aimed at mitigating organisational pathologies within public sector IT projects. Longitudinal studies could assess how sustained implementation of international standards and risk-based governance frameworks influence project outcomes over time. Additionally, comparative analyses across different governmental contexts would help identify universal and context-specific factors that facilitate or hinder digital transformation. Examining the role of emerging technologies and agile methodologies in overcoming entrenched dysfunctions may also provide valuable insights for future public sector reforms.

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Галина Мельник

Кандидат економічних наук, доцент
Чернівецький національний університет імені Юрія Федьковича
58012, вул. Коцюбинського, 2, м. Чернівці, Україна
https://orcid.org/0000-0001-5386-5903

Віктор Ровінський

Кандидат технічних наук, доцент
Карпатський національний університет імені Василя Стефаника
76018, вул. Шевченка, 57, м. Івано-Франківськ, Україна
https://orcid.org/0000-0001-8454-8580

Василь Мельник

Кандидат фізико-математичних наук
Чернівецький національний університет імені Юрія Федьковича
58012, вул. Коцюбинського, 2, м. Чернівці, Україна
https://orcid.org/0009-0005-2880-6449

Організаційні проблеми як першопричина системних невдач IT-проектів

Анотація. Актуальність дослідження зумовлена хронічними провалами державних проєктів у сфері інформаційних технологій, які супроводжуються перевищенням бюджетів і зривами термінів виконання, що становить глобальну проблему. Ці провали рідко мають суто технічний характер; вони є симптомами глибоких організаційних патологій. Традиційні підходи до управління проєктами та бізнес-аналізу зосереджені на раціональних процесах, часто ігноруючи ірраціональні сили, що їх деформують. Метою цього дослідження були аналіз і систематизація впливу чотирьох ключових організаційних патологій – дисфункційної формалізації, рентного поведінкового типу, фаворитизму та автократичного стилю управління – на основні процеси проєктного менеджменту та бізнес-аналізу у державних IT-проєктах. Основним методом дослідження був тематичний аналіз за шестистадійною моделлю. Емпіричну базу склали M = 18 відкритих документів за 2019-2025 рр., відібраних відповідно до принципів бажаних звітних елементів для систематичних оглядів та метааналізів (PRISMA). Джерела включали аудиторські звіти вищих органів аудиту та офіційні звіти правоохоронних органів, що пройшли тріангуляцію. Аналіз даних виявив три основні механізми деформації процесів в управлінні проектами та бізнес-аналізу: (1) формалізація та ритуалізація, що перетворює управління ризиками та метриками на формальність; (2) інверсія та саботаж (через рентну поведінку), що перетворює проєктний менеджмент та бізнес-аналіз на інструменти фальсифікації закупівель та розтрати коштів; (3) домінуючий автократичний стиль, що замінює системні процеси волею лідера. Сформовано концептуальну матрицю, що деталізує цей вплив. У роботі запропоновано набір критеріїв для раннього виявлення патологій та практичні рекомендації щодо протидії (зокрема, шляхом використання відкритих даних та посилення раціональної стандартизації). Практична значущість запропонованої матриці полягає в її функції діагностичного інструмента для менеджерів проєктів, бізнес-аналітиків та аудиторів

Ключові слова: проєктний менеджмент; бізнес-аналіз; організаційна патологія; корупція у закупівлях; бюрократія

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