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ASSESSMENT OF INVESTOR EXPECTATIONS OF IT OUTSOURCING COMPANIES AS A FACTOR OF STRATEGIC TRANSFORMATION

ОЦІНКА ОЧІКУВАНЬ ІНВЕСТОРІВ ІТ-АУТСОРСИНГОВИХ КОМПАНІЙ ЯК ФАКТОР СТРАТЕГІЧНОЇ ТРАНСФОРМАЦІЇ

Summary. *Introduction. The article presents a strategic management approach, emphasizing the importance of strategy as a tool for shaping corporate objectives and ensuring competitive advantages. It gives particular attention to companies' need to adapt to the dynamic conditions of the global business environment, which are driven by technological advancements, globalization processes, and shifting consumer preferences. A special focus is placed on IT outsourcing, which enables client companies to rapidly adapt to market changes and IT outsourcing companies to adjust to these transformations.*

At the same time, modern scientific literature insufficiently addresses the strategic aspects of IT outsourcing companies' operations as they integrate into clients' business processes. This study aims to identify the specific features of strategy development for IT outsourcing companies by analyzing the "stock volatility–average profitability" model compared with software development companies and representatives of the "classical" economy, particularly international oil and gas companies.

Research Objective. To analyze the specific features of strategy formation in IT outsourcing companies based on the volatility analysis of their stocks, using data from the world's top 10 IT outsourcing companies, and to identify the peculiarities of their strategies compared with those of the top 10 software development companies and the top 10 leading international oil and gas companies representing the "classical" economy.

Practical Significance of the Study. The study's practical significance lies in identifying the key factors influencing the strategy formation of IT outsourcing companies. This knowledge facilitates the adaptation of top management to emerging challenges and enhances companies' competitiveness in the global environment.

Materials and Methods. The study materials included:

1. Academic works by domestic and international researchers focusing on strategic management, global IT outsourcing, and its impact on client companies' performance.

2. Statistical analysis of stock market reports from international IT outsourcing companies, software "product" development firms, and leading oil and gas companies to examine the relationship between stock volatility and investor average returns.

The study's methodology encompassed theoretical generalization and grouping, formalization, analysis, and synthesis, as well as a mathematical tool for calculating linear trend dependencies between "stock volatility" and "average returns" of shares of three companies from 2015 to 2025.

Results. An analysis of historical dependencies between "volatility" and "average returns" on stock operations revealed significant differences in the strategies of leading international oil and gas companies, software development firms, and IT outsourcing companies.

Oil&Gas Integrated companies and IT software "product" development firms demonstrated a classical relationship between risk (measured by standard deviation) and historical profitability.

IT outsourcing companies exhibited a distinct pattern, indicating how investors perceive their operations. These companies' securities are primarily valued based on the unpredictability of their future earnings, risks, and individual strategies, distin-

guishing them from other companies. The article substantiates the need to study approaches to transforming the strategy of IT outsourcing companies, considering investors' expectations regarding the market's uncertainty.

Prospects. The strategic distinctions between IT outsourcing providers and firms in software development or oil and gas create opportunities to refine IT outsourcing strategies. To develop an effective plan for IT outsourcing companies, it's essential to focus on investor expectations, which can be assessed through sustainability and profitability metrics.

Key words: *IT outsourcing, outsourcing strategy, international outsourcing, stock volatility.*

Анотація. *Вступ. У статті представлено підхід до стратегічного управління, підкреслено важливість стратегії як інструменту формування корпоративних цілей та забезпечення конкурентних переваг. Особлива увага приділяється потребам компаній адаптуватися до динамічних умов глобального бізнес-середовища, викликаних технологічним прогресом, процесами глобалізації та зміною споживчих уподобань. Особлива увага приділяється IT-аутсорсингу як засобу забезпечення швидкої адаптації компаній-клієнтів до змін ринку та як інструменту для IT-аутсорсингових компаній пристосуватися до цих трансформацій.*

Водночас у сучасній науковій літературі недостатньо висвітлено стратегічні аспекти діяльності IT-аутсорсингових компаній у міру їх інтеграції в бізнес-процеси клієнтів. Це дослідження спрямоване на виявлення особливостей розробки стратегії IT-аутсорсингових компаній шляхом аналізу моделі «волатильність акцій–середня прибутковість» у порівнянні з компаніями-розробниками програмного забезпечення та представниками «класичної» економіки, зокрема міжнародних нафтогазових компаній.

Мета дослідження. Проаналізувати особливості формування стратегії IT-аутсорсингових компаній на основі аналізу волатильності їх акцій, використовуючи дані 10 найкращих IT-аутсорсингових компаній світу та виявити особливості їх стратегій у порівнянні з 10 провідними компаніями з розробки програмного забезпечення, та 10 провідних міжнародних нафтогазових компаній, що представляють «класичну» економіку.

Практична значущість дослідження. Практичне значення дослідження полягає у виявленні реакції інвесторів на фондовому ринку щодо стратегії розвитку IT аутсорсингових компаній. Розуміння причин реакції інвесторів, як об'єктивного показника, дасть поштовх до формування ефективних стратегії IT-аутсорсингових компаній які будуть сприйняті ринком.

Матеріали та методи. Матеріали дослідження включали:

1. Наукові праці вітчизняних та міжнародних дослідників, присвячені стратегічному управлінню, глобальному IT-аутсорсингу та його впливу на ефективність компаній-клієнтів.

2. Статистичний аналіз звітів про фондовий ринок від міжнародних IT-аутсорсингових компаній, фірм з розробки програмного забезпечення та провідних нафтогазових компаній для вивчення зв'язку між волатильністю акцій та середньою прибутковістю інвесторів

Методи. Методологія дослідження охоплювала теоретичне узагальнення та групування, формалізацію, аналіз і синтез, а також математичний інструмент для розрахунку лінійних залежностей тренду між «волатильністю акцій» і «середньою прибутковістю» акцій трьох груп компаній з 2015 по 2025 рік.

Результати. Аналіз історичних залежностей між «волатильністю» та «середньою прибутковістю» операцій з акціями виявив суттєві відмінності в стратегіях провідних міжнародних нафтогазових компаній, фірм з розробки програмного забезпечення та IT-аутсорсингових компаній.

Нафтогазові компанії та компанії з розробки програмного забезпечення (далі IT «продуктові» компанії) продемонстрували класичний зв'язок між ризиком (виміряним стандартним відхиленням) та історичною прибутковістю операцій з їхніми акціями.

IT-аутсорсингові компанії продемонстрували чітку модель, що вказує на те, як інвестори сприймають їх діяльність. Інвестори сприймають їхні стратегії як суперечливі порівняно зі стратегіями нафтогазових і програмних компаній. У статті обґрунтовується необхідність дослідження підходів до трансформації стратегії IT-аутсорсингових компаній з урахуванням очікувань інвесторів щодо невизначеності ринку.

Перспективи. Стратегічні відмінності між постачальниками IT-аутсорсингу та фірмами, що займаються розробкою програмного забезпечення або нафтою та газом, створюють можливості для вдосконалення стратегій IT-аутсорсингу. Щоб розробити ефективний план для IT-аутсорсингових компаній, важливо зосередитися на очікуваннях інвесторів, які можна оцінити за допомогою показників стійкості та прибутковості.

Ключові слова: *IT аутсорсинг, стратегія аутсорсингу, міжнародний аутсорсинг, волатильність акцій.*

Statement of the Problem. The literature on strategic management describes strategy as a crucial instrument for shaping corporate objectives and securing sustainable avenues for competitive advantage [1; 2]. Strategy is instrumental in defining an organization's long-term goals and the requisite resources for attaining them [3].

In the contemporary global business milieu, characterized by technological advancement, globalization, evolving consumer preferences, and extensive regulation, businesses are compelled to adapt to sustain their competitiveness perpetually. Under such circumstances, firms must guarantee heightened productivity and financial performance [4].

Strategies based on a stable environment tend to prove ineffective [5]. However, strategic adaptation becomes necessary in the face of rapid market changes. IT outsourcing is a pivotal mechanism for enabling customer organizations to navigate these changes [5]. Successful collaborations between customers and providers of IT outsourcing services necessitate a mutual comprehension of the prospects for their development.

Nevertheless, current literature predominantly examines these relationships from the customer's vantage point, often overlooking the distinctive strategic considerations of IT outsourcing firms integrated into their customers' operational processes [6].

The strategies of IT outsourcing firms must be tailored to their specific characteristics, which differ from those of companies that produce ready-made IT products. Firms must formulate adaptive long-term strategies to preserve their competitiveness in an environment marked by swift changes.

This study seeks to provide a comprehensive understanding of information technology (IT) outsourcing strategies. It analyzes the model of 'stock volatility of shares — average profitability from transactions involving those shares' as it applies to a group of the ten largest IT outsourcing companies by market capitalization.

The findings of this study, which are compared with similar models from the ten leading international software firms, termed here as IT 'product' companies, and the ten largest global oil and gas entities, are of significant value. This analysis highlights crucial elements that shape the development of IT outsourcing strategies through empirical data evaluation and stock market investor behavior. This insight aids upper management in tackling new challenges and boosting competitiveness by adopting best practices from various industries.

The scholars in [5] define IT outsourcing as the process of engaging external resources to manage the client organization's information systems, develop software, or create infrastructure while the client organization retains control over key aspects of such activity.

This approach fundamentally differs from merely acquiring software or hardware for internal use, as the relationship and framework of the IT outsourcing project influence not only the client organization's current operational activities but also impact long-term goals and anticipated future profits [5; 6].

Furthermore, subsequent academic research has significantly broadened the investigation into the effect of IT outsourcing on the market efficiency of client organizations. In Ukraine, these issues have been examined by Brin P. V., Baulo O. V., Dergachova V. V., Lyutak O. M., Parkhomenko N. O., Parkhomenko O. V., Kryvoruchko O. V., among others, with a primary focus on the practical aspects of outsourcing and the competitive advantages of Ukrainian IT companies in the international IT outsourcing services market.

However, the specifics of IT outsourcing companies' strategic development remain inadequately addressed. Famous researchers, including J. Fjermestad, J. Saitta, C. Weigelt, D. Mani, A. Barua, A. Whinston, Murthy, S., and other scholars, utilize various empirical materials [6–10] to investigate the level of operational interactions between IT outsourcing companies and their clients.

They further investigate the impact of IT outsourcing on the market performance of companies and consumers of IT outsourcing services who engage in such outsourcing arrangements. For instance, the research in [7] identifies an inverted U-shaped relationship between the client organization's market share and the outsourcing volume. As the volume of outsourcing services increases, the market share rises to a certain threshold, beyond which the effect diminishes.

Concerning the influence of outsourcing on the market value of client organizations, a study [8], which analyzes 100 global outsourcing initiatives (1996–2005), asserts that:

– Delegating complex functions to external service providers without sufficient collaboration experience decreases the market value of shares.
– Making short-term decisions without incorporating the IT department into the organization's strategic objectives introduces the risk of excessive costs in the future.

Research [9] delineates three primary areas through which outsourcing impacts the productivity of the client organization: personnel, business processes, and products and services. For instance, outsourcing can lead to a more efficient use of personnel, streamlined business processes, and improved products and services. Lastly, work [10] establishes and synthesizes strategic objectives for the lasting success of outsourcing projects.

Enhancement of the information systems utilized by the company, specifically as a client of IT outsourcing services.

Optimization of operational processes for customer companies.

Leveraging the assets of the outsourcing firm to innovate new products and services for the company that ordered IT outsourcing.

In pursuit of these objectives, factors such as the clarity of outsourcing goals, the alignment of contracts with the client company's strategic ambitions, and the competencies of the outsourcing provider are significant.

The study referenced [11] examines a dynamic model of IT outsourcing that incorporates flexible contracts, moral hazards, and bounded rationality. This model is significant as it demonstrates that organizations adhering to high ethical standards achieve superior long-term profits owing to the exchange of intellectual property and enhanced reputation.

Contemporary approaches to outsourcing are predicated upon reevaluating the 'boundaries of the firm'

following Ronald Coase's classical theory of the firm [12]. This theory suggests that firms exist because they are more efficient than the market in organizing production.

Enhanced collaboration with outsourcing partners transforms conventional perceptions of firm boundaries, thereby influencing the volatility of client stock prices. The market interprets such relationships as adding or subtracting from the resources under the firm's control.

Consequently, the "boundaries of the firm" are perceived as "blurred" from a market perspective. Outsourcing becomes increasingly dependent on the success of interactions among several legally independent entities. Outsourcing emerges as a critical factor significantly impacting businesses' profitability and stability, warranting thorough empirical analysis.

References [13–15] explore the impact of earnings uncertainty on market investor behavior. It is well established that a security's market value reflects the discounted present value of the expected cash flows from ownership and resale of these shares [16].

In the document [17], the authors examine the linear regression analysis of how company earnings affect their stock exchange rates. The calculated coefficient of determination, denoted as R^2, indicates that low R^2 values in regression models are associated with an unstable informational environment and idiosyncratic (internal) factors unique to specific companies.

From the literature review, it can be inferred that the effects of IT outsourcing on the productivity and valuation of client firms are complex and nonlinear. The main factors influencing this relationship include:
– Alignment of client companies' strategies, the development of their IT departments, and the capabilities of IT outsourcing providers.
– The experience both the client and the outsourcing firm have in executing outsourcing projects.

Establishing long-term relationships relies on analyzing interaction risks and considering the outsourcing provider's nonlinear impact on the client firm's performance.
– The use of earnings volatility and movements in market share prices as criteria for selecting IT outsourcing partners.
– The anticipation of market responses to the strategic initiatives implemented by IT outsourcing providers.

Therefore, the developmental strategy of an IT outsourcing firm requires a comprehensive approach to assess its influence on market efficiency and the integration processes within client business models.

Presentation of the main material. Organizations confronting significant uncertainty and rapid fluctuations in resource and consumer markets must assess their strategies utilizing objective indicators. One important indicator is the examination of the volatility of publicly traded equities. Following the "semi-strong" form of the efficient market hypothesis, prevailing stock prices encapsulate nearly all available information regarding the company's circumstances and the anticipated returns projected by investors on these equities. Moreover, this analysis evaluates the clarity and feasibility of the corporation's strategic implementation.

Consequently, investigating the historical correlations between the standard deviation of stock returns and the returns generated by these equities across numerous firms within a specific economic sector equips management with invaluable insights into investor perceptions of the executed strategy.

In this framework, profits derived from trading a company's securities should be regarded solely as the gains attributable to the associated risk involved in purchasing or selling such securities; thus, dividend income from these assets remains included in the calculations.

The most illustrative analysis concentrates on companies possessing the most significant market capitalization, particularly those listed within the top ten capitalization rankings. The profit from stock transactions is as follows:

$$I_{share} = \frac{\left(P_t - P_{t-1}\right)}{P_{t-1}}, \quad (1)$$

where: I_{share} — this is the income from the resale (market transaction) of a share (measured in fractions of a unit per year);

P_t — this is the price on the stock exchange for the current year (period January 01–05 of the year): P_{t-1} — This is the price on the stock exchange for the previous year (period January 01–05 of the year).

For example, if the stock market price on January 1, 2015, was $100, and on January 1, 2016, it increased to $120, the notional annual income for the investor from the sale of shares according to formula (1) will be: (120 – 100)/100 = 0.20 or 20%, for 2015.

This calculation does not consider the difference between the asking and selling prices on the exchange, brokerage fees for account maintenance, tax deductions, and other expenses. The term "profit from stock transactions" refers to the notional income illustrated in the example above

Based on the data provided in sources [21–22], an analysis conducted by the author led to the compilation of a list of the largest capitalized companies within three sectors of the economy:
– International Oil&Gas Integrated companies.
– International IT software "product" companies;
– International IT outsourcing companies.

In addition to the criterion of inclusion in the "Top 10" by capitalization, the presence of stock quotations since at least January 1, 2015, constituted a significant factor for these groups. This criterion enabled a comprehensive analysis of nearly a decade of historical stock performance. The results have been aggregated and are presented in the Appendix in Tables D1–D3, respectively.

Next, using formula (1), the profitability of securities transactions was calculated for each of the 10 companies in each industrial group for each year, where the base period was set to 01/01/2015. The annual profitability of securities transactions for each company in the three studied groups is shown in Appendix Tables D4–D6, respectively. The average profitability of transactions for each of the 10 companies in each group was calculated as the arithmetic mean for the period (in this case from 2015 to 2025 (01–05 Jan):

$$\mu_j = \frac{\sum_{t=1}^{10} I_t^j}{n}, \quad (2)$$

where: μ_j — arithmetic mean of profitability for the period 2015–2025 for company j; n — means data for 10 years, i.e. n = 10 [16].

The formula gives the standard deviation for the stock return of each company j:

$$\sigma_j = \sqrt{\frac{\sum_{t=1}^{10} (I_j - \mu_j)^2}{n-1}}, \quad (3)$$

where: I_j — profit for each year from transactions with securities of company j according to formula (1); μ_j — according to formula (2); n = 10 [16].

Additionally, the correlation coefficient ρ between the standard deviation σ and the average profit μ was computed for each of the three analyzed groups of companies for the period from 2015 to 2025 using the formula:

$$Correl\,\rho(k)(\sigma_j;\mu_j,k) = \frac{\Sigma(\sigma_j - \sigma_j^{aver})(\mu_j - \mu_j^{aver})}{\sqrt{\Sigma(\sigma_j - \sigma_j^{aver})^2 \Sigma\mu_j - \mu_j^{aver})^2}} \quad (4)$$

where: $Correl\,\rho(k)(\sigma_j;\mu_j,k)$ — correlation coefficient between μ_j (formula (2) company j in group k, and the standard deviation σ_j (formula (3) for the period 2015–2024, μ_j^{aver} — average profit for the entire period for all companies from group k, σ_j^{aver} — average value of the standard deviation for all companies from group k for the whole period of the study.

Figure 1 shows the relationship between the standard deviation σ and historical returns on securities transactions of the "Top 10" international Oil&Gas Integrated companies.

Figure 1 displays a linear regression equation illustrating the relationship between the analyzed parameters. The high $\boldsymbol{R^2 = 0.901 \approx 1}$, indicates that investors thoroughly comprehend companies' strategies in the "classical" energy sector, enabling them to estimate future profits from these security transactions accurately enough [17–19].

As illustrated in Figure 2, a similar relationship has been established between the standard deviation σ and the average profit μ derived from transactions involving the securities of the "Top 10" IT software "product" companies.

Figure 2 also shows a linear regression equation describing the relationship between the studied parameters. According to the high value of R^2, which is quite close to $\boldsymbol{R^2 = 0.845 \approx 1}$, investors understand the strategy of IT software "product" companies and can also quite correctly calculate future profits from transactions with such securities [17–19].

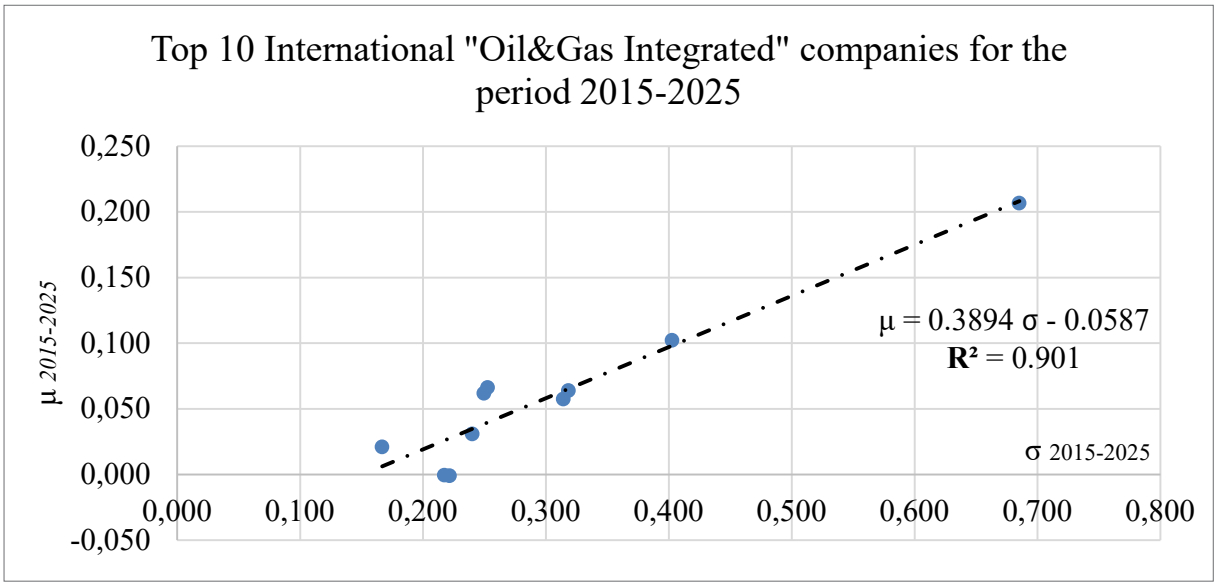

Fig. 1. Dependence of the average income μ from transactions with securities of companies from the "Top 10" of the Oil&Gas sector and the standard deviation σ of obtaining such income for the period 2015–2025

Source: constructed by the author based on data from Table D4 (rows with μ and σ) in the Appendix

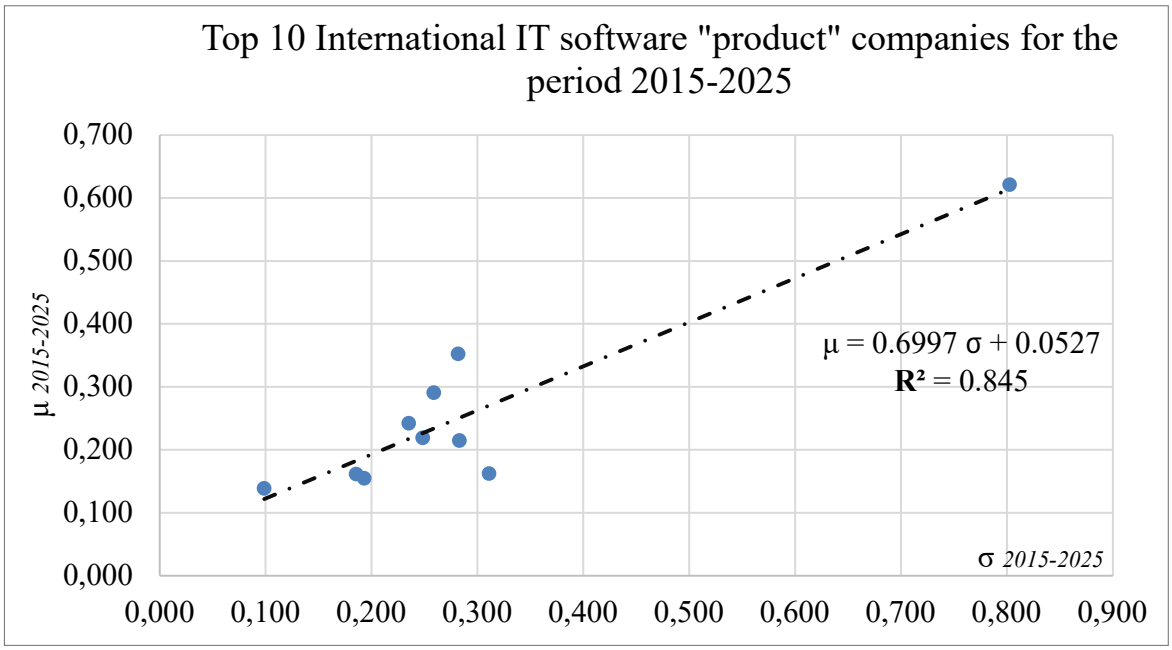

Fig. 2. Dependence of the average income μ from transactions with securities of companies from the "Top 10" IT software "product" companies and the standard deviation σ of obtaining such income for the period 2015–2025

Source: constructed by the author based on data from Table D5 in the Appendix (rows with μ and σ)

Finally, the relationship between the standard deviation σ and the average profit μ from transactions with securities of the "Top 10" IT international outsourcing companies was constructed, which is shown in Figure 3.

Figure 3 presents a linear regression equation delineating the relationship between the parameters under investigation. A low R^2 value, significantly deviating from $R^2 = 0.112 << 1$, suggests that investors generally lack a comprehensive understanding of the industry outlook and predominantly rely on internal performance indicators specific to IT outsourcing companies [17–19].

Moreover, it is noteworthy that the slope of the regression line for IT outsourcing companies, as illustrated in Figure 3, stands in stark contrast to the slope

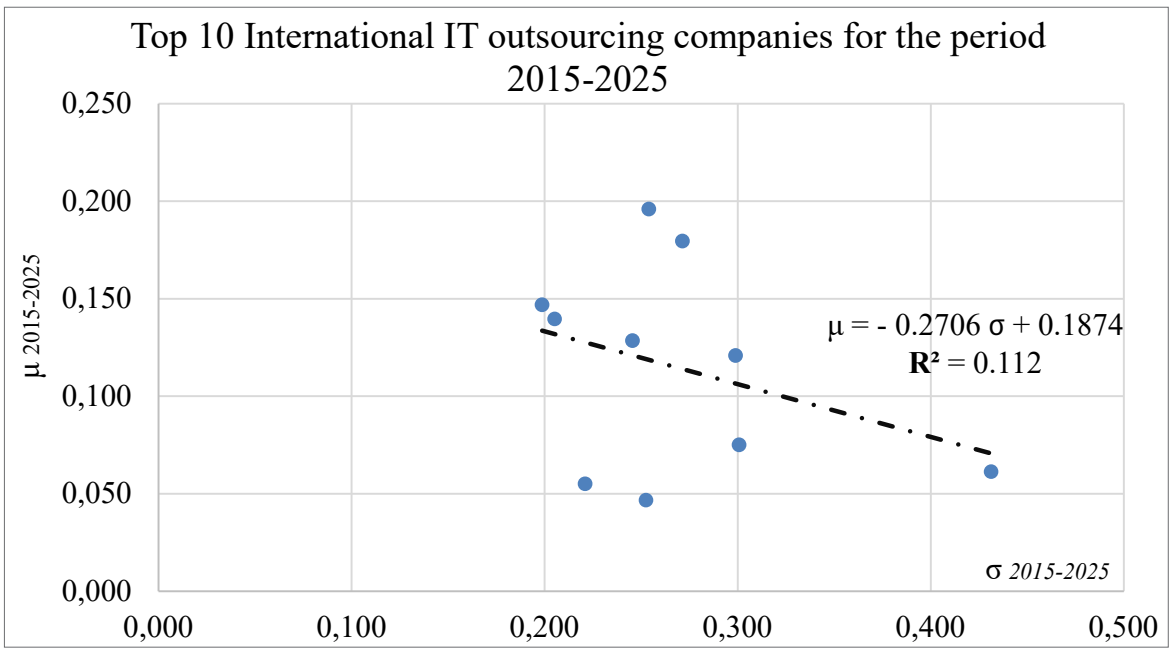

Fig. 3. Dependence of the Average Income μ from transactions with securities of companies from the "Top 10" IT outsourcing companies and the standard deviation σ of obtaining such income for the period 2015–2025

Source: constructed by the author based on data from Table D6 in the Appendix (rows with μ and σ)

Table 1

The correlation coefficient between the average profit for the period from securities transactions of companies, μ, from each group of the studied industries and the standard deviation of such profits, σ all period 2015–2025

Top –10	Correlation coefficient ρ between σ and μ, period 2015–2025
International Oil&Gas Integrated companies	0.953
IT international software "product" companies	0.919
IT international outsourcing companies	**-0.343**

Source: the author calculates based on the formula for ρ (4) and data in the rows below for σ and μ variables. Tables D4-D, in the Appendix (rows μ and σ)

observed for oil and gas companies and IT product companies. The upward slope of the regression lines for oil and gas companies and IT product companies exemplifies the classical risk-return relationship [16], in which increasing returns offset the higher-risk strategies embraced by investors.

In contrast, the opposite trend is evident among IT outsourcing companies. Investors exhibit uncertainty regarding industry expectations, hindering their ability to assess prevailing industry trends. Consequently, the escalation in risk (as quantified by a higher standard deviation σ) does not align with a proportional increase in returns from transactions involving the securities of IT outsourcing companies.

This observation implies that investors favor a detailed analysis of the specific prospects of individual IT outsourcing companies whose shares they contemplate incorporating into their investment portfolios. In this context, the impact of idiosyncratic (internal) factors on stock pricing markedly surpasses the influence of industry affiliation for international IT outsourcing companies.

The results of the visual analysis of the slope of the regression line are confirmed by calculating the correlation coefficients between the parameters σ and μ for each group of companies, as summarized in Table 1. The negative sign in Table 1 of the correlation coefficient signifies that an increase in one variable is associated with a decrease in the other variable. This implies that the average income tends to decrease when the standard deviation rises. This observation contradicts the "classical" perspective on the relationship between risk and income, as posited by the securities pricing model in the market.

It should be acknowledged that IT software "products" companies and IT outsourcing firms function within a singular high-tech market. Both sectors utilize various advanced digital technologies and innovations that are cost-effective in producing software products and providing IT outsourcing services.

Consequently, it is insufficient to attribute the varied strategies of investors toward these two industry groups solely to the disparities in technologies. Furthermore, it is often the case that IT product companies and IT outsourcing companies collaborate to fulfill the needs of end users [11]. However, investors in the stock market exhibit significant disparities in their evaluations of the strategic initiatives employed by companies within the IT software "product" sector compared to those engaged in the IT outsourcing sector. The primary factor contributing to this difference likely pertains to the formulation and execution of strategies by IT outsourcing companies as opposed to those of IT software "product" companies.

Conclusions. After a thorough analysis of volatility, measured by standard deviation σ and historical average returns μ from stock market activities, the proposed method emerges as a crucial indicator of the strategic decisions made by management in IT outsourcing firms. Unlike traditional Oil&Gas companies and IT software product firms, the noticeable discrepancy between investors' risk and reward highlights opportunities to improve strategies within the IT outsourcing industry.

IT outsourcing companies can sharpen their strategic initiatives by better understanding how investors view the potential of securities in this space. Aligning with market expectations could fortify their competitive advantages and enhance the attractiveness of their shares, appealing to investors and potential clients who keenly observe the stock price fluctuations of their partners — IT outsourcing firms.

Directions for Future Research. Exploring avenues through which IT outsourcing companies can cultivate their long-term competitive strategies is necessary. This research should examine methodologies, frameworks, and, primarily, the dynamic capabilities of IT outsourcing firms that may bolster their strategic positioning and facilitate sustained growth within the global and multidimensional IT outsourcing landscape.

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Appendix

Table D1

"Top 10" International "Oil&Gas Integrated" company stock quotes ($)

Year (01–05 January)	Stock Sticker / Company Name									
	XOM/Exxon Mobil Corp.	CVX/Chevron Corp.	SHEL/ Shell Plc ADR	TTE/Total Energ. SE ADR	BP.BP/ plc ADR	EQNR/Equinor ASA ADR	PBR //Petroleo Brasil. S.A. Petro-bras ADR	ENI/Spa ADR	SU/Suncor Energy, Inc.	IMO /Imperial Oil Ltd.
2015	87.42	102.53	61.45	50.65	38.83	16.8	6.01	33.9	29.81	37.11
2016	77.85	86.47	43.93	43.58	32.37	13.6	3.47	28.95	23.55	30.61
2017	83.89	111.35	54.39	49.71	35.98	18.67	10.26	30.91	31.04	32.88
2018	87.3	125.35	70.24	57.09	42.79	23.44	13.36	36.22	36.25	31.44
2019	73.28	114.65	61.73	53.81	41.12	22.78	16.3	33.88	32.32	28.49
2020	62.12	107.14	52.15	47.77	36.13	18.18	14.11	27.99	30.59	23.68
2021	44.84	85.2	36.89	41.37	22.22	17.73	10.05	20.15	16.73	19.02
2022	75.96	131.33	51.4	55.85	30.92	27.55	13.35	29.96	28.57	40.92
2023	116.01	174.02	58.81	62.04	36.23	30.43	11.6	30.9	34.72	54.76
2024	102.81	147.43	62.91	65.18	35.1	28.67	17.07	31.95	33.12	57.69
2025	107.86	147.85	64.52	55.48	30.47	25.2	13.02	27.7	36.43	62.41

Source: stock screening by the author based on [21; 22]

Table D2

"Top 10" International "IT software (product) companies" stock quotes ($)

Year (01–05 January)	Stock Sticker / Company Name									
	MSFT / Microsoft	ORCL / Oracle	SRM / Salesforce	INTU /Intuit Inco	CDNS /Cadence Design Systems Inc	ADSK /Autodesk Inc.	ADP/ Automatic Data Processing Inc.	SAP/ SAP SE ADR (Germany)	SHOP/Shopify Inc	WDAY/Workday Inc
2015	40.4	41.89	56.45	86.82	17.99	54.01	82.53	64.98	3.39	79.46
2016	55.09	36.31	68.06	95.51	19.56	46.82	83.09	79.34	2.32	63.01
2017	64.65	40.11	79.10	118.58	26.03	81.34	100.99	90.98	5.08	83.09
2018	95.01	51.59	113.91	167.90	44.86	115.62	123.63	112.59	12.79	119.89
2019	104.43	50.23	151.97	215.82	48.03	147.20	139.84	102.82	16.85	181.53
2020	170.23	52.45	182.31	280.38	72.11	196.85	171.39	130.01	46.57	184.63
2021	231.96	60.43	225.56	361.23	130.39	277.43	165.12	125.47	109.86	227.53
2022	310.98	81.16	232.63	555.23	152.14	249.79	206.17	124.48	96.42	253.01
2023	247.81	88.46	167.97	422.67	182.83	215.16	225.81	118.53	49.27	181.43
2024	397.58	111.70	281.09	631.33	288.46	253.81	245.78	173.10	80.07	291.07
2025	423.35	166.32	332.90	630.23	303.86	294.06	291.69	241.40	109.25	252.84

Source: stock screening by the author based on [21;22]

Table D3

"Top 10" International "IT outsourcing companies" stock quotes ($)

Year (01–05 January)	Stock Sticker / Company Name									
	IBM / Information Technology Services	CTSH / Cognizant	TCS / TATA Consulting	HCLT/ HCL Tech	ACN /Accenture plc	WIT /Wipro Ltd	INFY/ Infosys	(DXC)/ DXC Techn	CAPP */Capgemini	SNX /Synnex
2015	183.66	54.13	1187.11	401.7	88.84	2.411	8.43	22.11	72.87	37.17
2016	134.73	63.31	1143.70	422.93	101.83	2.197	8.86	27.74	91.09	42.06
2017	133.57	52.59	1066.46	414.25	116.46	1.731	6.81	53.8	81.36	60.21
2018	113.77	77.98	1488.57	439.35	153.84	2.059	8.91	86.11	132.83	61.48
2019	137.29	69.68	1926.60	479.93	140.59	2.134	10.74	64.12	110.41	48.47
2020	128.39	61.38	2028.37	571.95	210.15	1.815	10.9	31.88	124.63	69.01
2021	156.36	77.95	3035.51	940.21	256.46	3.075	16.78	28.2	145.06	81.62
2022	166.70	85.42	3645.18	1326.15	407.21	3.845	23.44	30.08	221.77	104.57
2023	119.19	66.75	3343.21	1039.45	270.26	2.445	18.69	28.73	188.89	102.15
2024	146.44	77.12	3815.95	1483.75	346.92	2.83	19.75	21.8	224.11	99.98
2025	222.65	76.38	4095.00	1953.05	353.85	3.50	22.63	19.87	166.04	117.93

Source: stock screening by the author based on [21; 22]

** The shares of Capgemini are traded in euros; consequently, the author converted the share prices from euros to dollars utilizing the currency exchange rates from January 1st to January 5th for each respective year.*

Table D4

Annual profit I from securities transactions Top 10 International "Oil&Gas Integrated" companies

Period January/ January	Stock Sticker / Company Name									
	XOM/Exxon Mobil Corp.	CVX/Chevron Corp.	SHEL/Shell Plc ADR	TTE/TotalEnergies SE ADR	BP/BP plc ADR	EQNR/Equinor ASA ADR	PBR/ Petroleo Brasileiro S.A. Petrobras ADR	ENI/ Spa ADR	SU/Suncor Energy, Inc.	IMO /Imperial Oil Ltd.
2015/2016	-0.109	-0.157	-0.285	-0.140	-0.166	-0.190	-0.422	-0.146	-0.210	-0.175
2016/2017	0.078	0.288	0.238	0.141	0.112	0.373	1.956	0.068	0.318	0.074
2017/2018	0.041	0.126	0.291	0.148	0.189	0.255	0.302	0.172	0.168	-0.044
2018/2019	-0.161	-0.085	-0.121	-0.057	-0.039	-0.028	0.220	-0.065	-0.108	-0.094
2019/2020	-0.152	-0.066	-0.155	-0.112	-0.121	-0.202	-0.134	-0.174	-0.054	-0.169
2020/2021	-0.278	-0.205	-0.293	-0.134	-0.385	-0.025	-0.287	-0.280	-0.453	-0.197
2021/2022	0.694	0.541	0.393	0.350	0.392	0.554	0.328	0.487	0.708	1.151
2022/2023	0.527	0.325	0.144	0.111	0.172	0.105	-0.131	0.031	0.215	0.338
2023/2024	-0.114	-0.153	0.070	0.051	-0.031	-0.058	0.471	0.034	-0.046	0.054
2024/2025	0.049	0.003	0.026	-0.149	-0.132	-0.121	-0.237	-0.133	0.100	0.082
μ formula(2)	0.057	0.062	0.031	0.021	-0.001	0.066	0.207	-0.001	0.064	0.102
σ formula (3)	0.314	0.250	0.240	0.167	0.222	0.253	0.685	0.217	0.318	0.403

Source: author's calculation based on data from Table D1 and using formulas (1) (2) and (3), respectively

Table D5

Annual profit I from securities transactions Top 10 International "IT software (product) companies"

Period January/ January	Stock Sticker / Company Name									
	MSFT / Microsoft	ORCL / Oracle	SRM / Salesforce	INTU /Intuit Inco	CDNS /Cadence Design Systems Inc	ADSK /Autodesk Inc.	ADP/ Automatic Data Processing Inc.	SAP/ SAP SE ADR (Germany)	SHOP/Shopify Inc	WDAY/Workday Inc
2015/2016	0.364	-0.133	0.206	0.100	0.087	-0.133	0.007	0.221	-0.316	-0.207
2016/2017	0.174	0.105	0.162	0.242	0.331	0.737	0.215	0.147	1.190	0.319
2017/2018	0.470	0.286	0.440	0.416	0.723	0.421	0.224	0.238	1.518	0.443
2018/2019	0.099	-0.026	0.334	0.285	0.071	0.273	0.131	-0.087	0.317	0.514
2019/2020	0.630	0.044	0.200	0.299	0.501	0.337	0.226	0.264	1.764	0.017
2020/2021	0.363	0.152	0.237	0.288	0.808	0.409	-0.037	-0.035	1.359	0.232
2021/2022	0.341	0.343	0.031	0.537	0.167	-0.100	0.249	-0.008	-0.122	0.112
2022/2023	-0.203	0.090	-0.278	-0.239	0.202	-0.139	0.095	-0.048	-0.489	-0.283
2023/2024	0.604	0.263	0.673	0.494	0.578	0.180	0.088	0.460	0.625	0.604
2024/2025	0.065	0.489	0.184	-0.002	0.053	0.159	0.187	0.395	0.364	-0.131
μ formula (2)	0.291	0.161	0.219	0.242	0.352	0.215	0.139	0.155	0.621	0.162
σ formula (3)	0.259	0.186	0.249	0.235	0.282	0.283	0.099	0.193	0.803	0.311

Source: author's calculation based on data from Table D2 and using formulas (1) (2) and (3) respectively

Table D6

Annual profit I from securities transactions Top 10 International "IT outsourcing companies"

Period January/ January	Stock Sticker / Company Name									
	IBM / Information Technology Services	CTSH / Cognizant	TCS / TATA Consulting	HCLT/ HCL Tech	ACN /Accenture plc	WIT /Wipro Ltd	INFY/ Infosys	(DXC)/ DXC Techn	CAPP/Capgemini	SNX /Synnex
2015/2016	-0.266	0.170	-0.037	0.053	0.146	-0.089	0.051	0.255	0.250	0.132
2016/2017	-0.009	-0.169	-0.068	-0.021	0.144	-0.212	-0.231	0.939	-0.107	0.432
2017/2018	-0.148	0.483	0.396	0.061	0.321	0.189	0.308	0.601	0.633	0.021
2018/2019	0.207	-0.106	0.294	0.092	-0.086	0.036	0.205	-0.255	-0.169	-0.212
2019/2020	-0.065	-0.119	0.053	0.192	0.495	-0.149	0.015	-0.503	0.129	0.424
2020/2021	0.218	0.270	0.497	0.644	0.220	0.694	0.539	-0.115	0.164	0.183
2021/2022	0.066	0.096	0.201	0.410	0.588	0.250	0.397	0.067	0.529	0.281
2022/2023	-0.285	-0.219	-0.083	-0.216	-0.336	-0.364	-0.203	-0.045	-0.148	-0.023
2023/2024	0.229	0.155	0.141	0.427	0.284	0.157	0.057	-0.241	0.186	-0.021
2024/2025	0.520	-0.010	0.073	0.316	0.020	0.237	0.146	-0.089	-0.259	0.180
μ formula (2)	0.047	0.055	0.147	0.196	0.179	0.075	0.128	0.061	0.121	0.140
σ formula (3)	0.253	0.221	0.199	0.254	0.271	0.301	0.246	0.431	0.299	0.205

Source: author's calculation based on data from Table D3 and using formulas (1) (2) and (3) respective